A CHILTON PUBLICATION

the iron Age

THE NATIONAL METALWORKING WEEKLY

September 25, 195

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modern high-speed COLD MILLS designed and built by MESTA

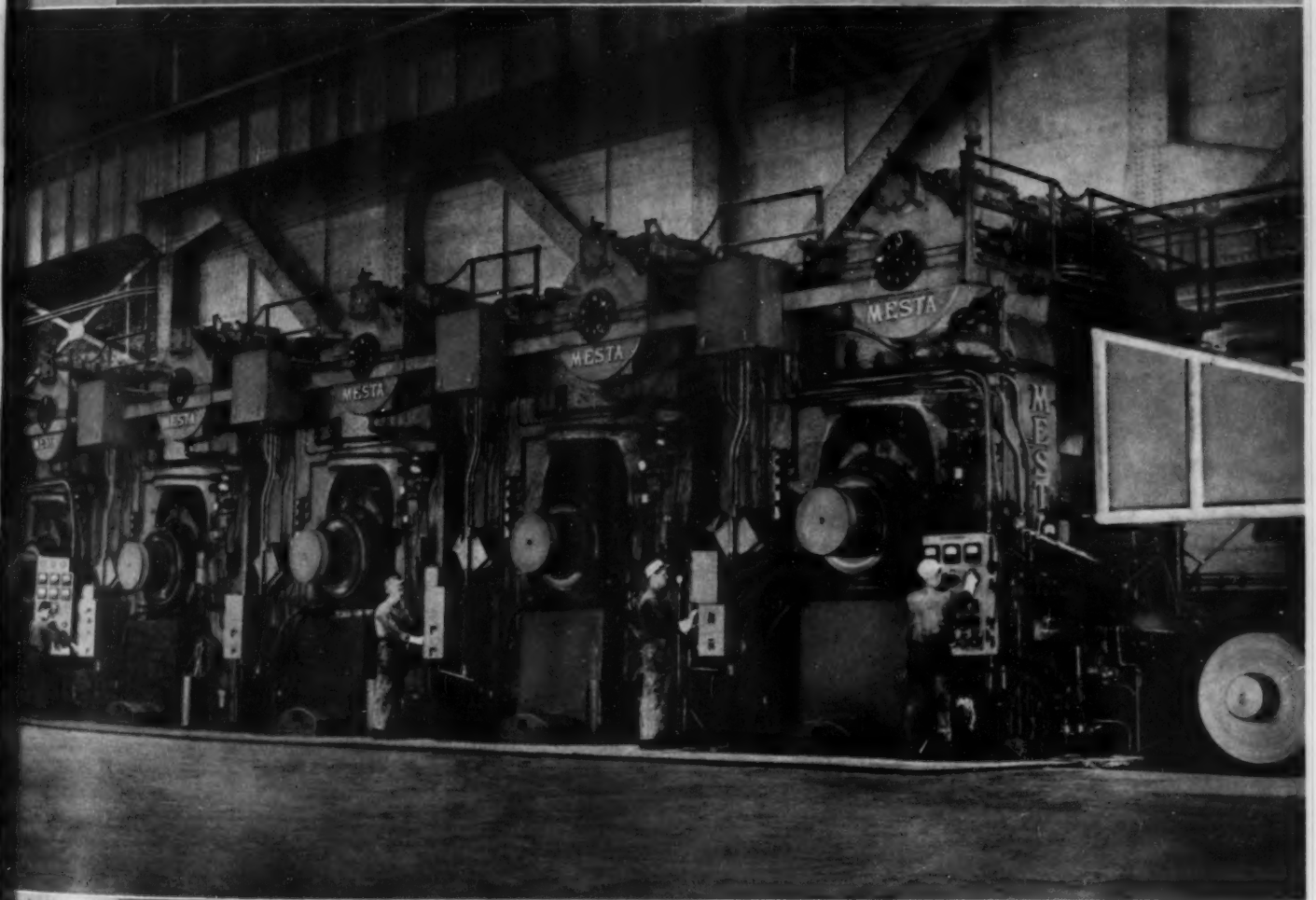

Photo by E. D. MESTA

The World's Highest Speed Cold Mill . . . Mesta 42" Four-High, Five-Stand Tandem Cold Mill installed at Jones & Laughlin Steel Corporation, Aliquippa Works

DESIGNERS AND BUILDERS OF COMPLETE STEEL PLANTS

MESTA MACHINE COMPANY · PITTSBURGH, PA.

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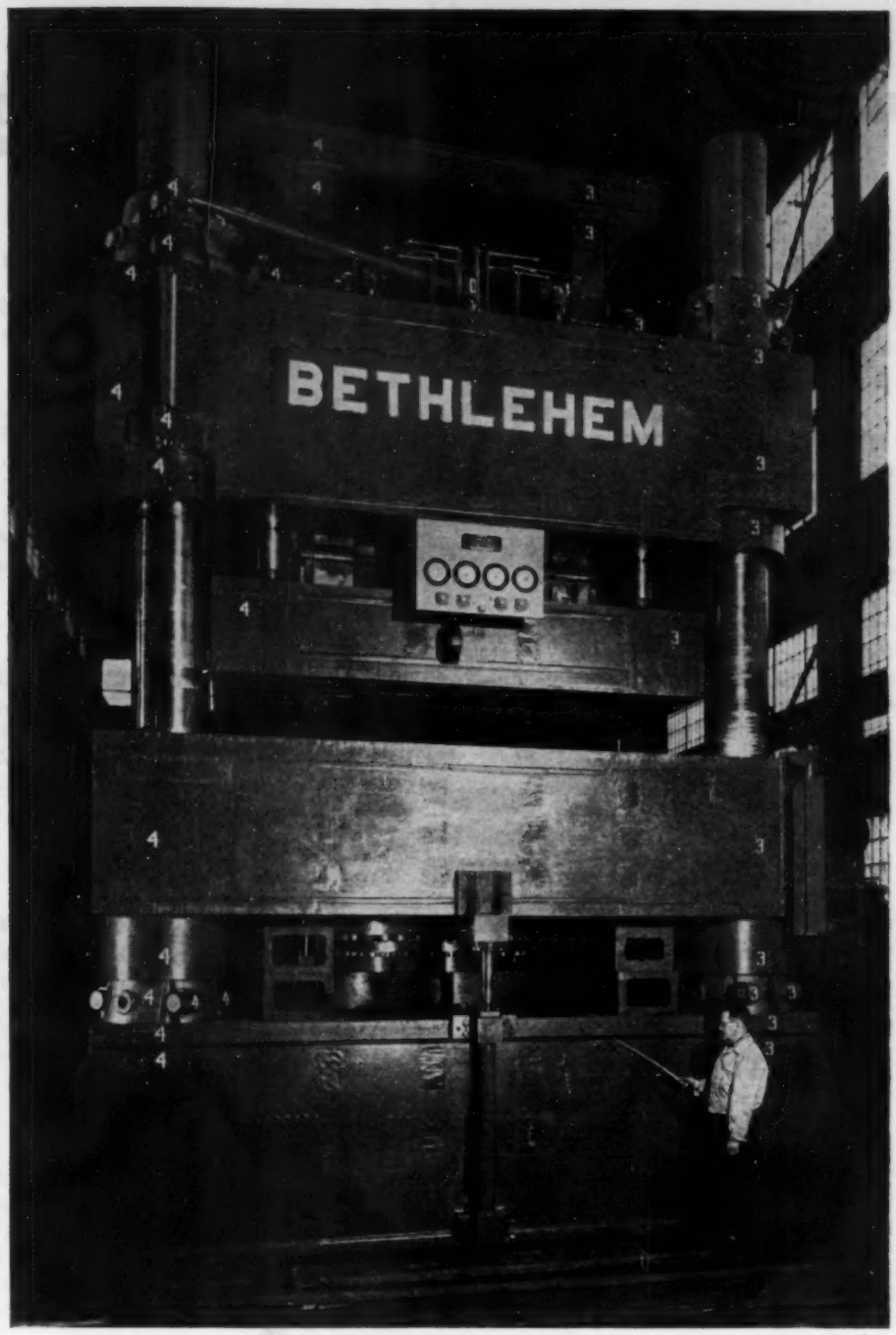

4000-ton forming press has 75% welded construction

This 4000-ton, hydraulic double-action forming press was built by Bethlehem for the Standard Railway Equipment Manufacturing Company. It has a 17 ft, 2 in. top platen, a 21-ft bottom platen, a 17 ft, 2 in. crosshead, and a 12-ft blankholder. Its total weight is 1,043,030 lb. About 75 pct of its construction involved the forming and welding of plate steel at Bethlehem's Weldment Shop.

In the construction of most any press, machine, or machine part, Bethlehem Weldments can be used to good advantage. For example:

Bethlehem Weldments are economical. They eliminate excess weight, without sacrificing rigidity. Their use frequently means a lower manufacturing cost for the finished product.

Bethlehem Weldments are versatile. They cover a size range so wide as to meet virtually every need. And they can be produced either as simple parts or intricate assemblies.

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There's every reason to believe that you will find Bethlehem Weldments to your liking. A Bethlehem representative would be glad to talk it over with you at your convenience. Just contact the nearest Bethlehem office.

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BETHLEHEM, PA.

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BETHLEHEM STEEL

BETHLEHEM WELDMENTS

The Iron Age—DIGEST

Vol. 170, No. 12
September 25, 1952

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THE IRON AGE, published every Thursday by the CHILTON CO. (INC), Chestnut & 56th Sts., Philadelphia 39, Pa. Entered as second class matter, Nov. 8, 1933, at the Post Office at Philadelphia under the act of March 3, 1879. $8 yearly in United States, its territories and Canada; other Western Hemisphere Countries, $15; other Foreign Countries, $25 per year. Single copies, 35¢. Annual Review and Metal Industry Facts Issue, $2.00. Cables: "Ironage," N.Y.

NEWS DEVELOPMENTS

TROUBLE WITH VERY HEAVY STEEL CASTINGS—P. 55
Although American steel foundries have been caught short on some very heavy casting capacity it is no sign of any overwhelming inadequacy. The industry has expanded and is operating at almost the World War II peak. Demands of other war-sprouting industries and war have exerted heavy demand.

REDS PUSH SATELLITE INDUSTRIAL MERGER—P. 58
Soviet Russia is pressuring Poland and Czechoslovakia to merge heavy industries in Eastern Upper Silesia and Moravska Ostrava area. Deposits of coal, iron and other metals plus good rail, highway and water routes are the reasons. Idea would change basic economy, lessen demand on Russian industrial potential.

FAIRLESS WORKS MAY PRODUCE THIS YEAR—P. 62
U. S. Steel's big new eastern mill may be turning out a limited amount of steel this year but it won't be taking giant-steps until mid-1953. Scrap, coal, ore all being stocked. Mooring slip nearly done. On hand are 21,000 applications for 6000 jobs—but too many want some, not enough want others.

UAW JUMPS THE GUN ON ESCALATOR CLAUSE—P. 72
UAW's asking for escalator revisions probably won't have any immediate effect since contract runs to '55. But it shows the trend of thought and internal pressure in the union. Request improvement boost, pension hike, cost of living gains tacked to b[illegible] pay. GM makes no comment, probably won't.

WE WON'T MISS OIL PIPELINE GOAL BY MUCH—P. 77
Despite the steel strike, 9000 miles of new pipelines may be put down this year. Industry goal for 1952 was 10,000 miles. Quick comeback by steel industry and sound planning by oilmen responsible for optimism. Office of Price Stabilization drops requirement forcing bidders to declare their ceiling prices.

NEW CANADIAN MAGNESIUM FOUNDRY STARTS—P. 85
Largest, most modern magnesium foundry in the Dominion opens. Government-financed $2.5 million plant will produce special alloy castings for jet engines and airframes. To be operated by Light Alloys Ltd. on 5-year lease. Capacity estimated at 200 tons of castings a month.

of the WEEK in metalworking

ENGINEERING & PRODUCTION

HOW WEIRTON STEEL GUARDS AGAINST FIRE—P. 113
Extensive use of Weirton Steel's built-in fire fighting system is teamed with portable extinguishers and two fire departments to keep fire damage and downtime at a minimum. Special classes train 300 men a year in use of fire extinguishers. Daily equipment inspections, special welding precautions are routine.

LINE PIPE MADE TO CLOSE SPECIFICATIONS—P. 118
Efficient materials handling facilities are a must in making large diameter line pipe in 40-ft lengths at a rate of 90 to 100 pieces per hr. Processing of more than 50,000 tons of steel per month requires fast operating tools and dies, and simple, efficient equipment for testing, finishing, shipping.

AUTOMATION SPEEDS FUEL TANK ASSEMBLY—P. 122
Fuel tank assembly operation is flexible enough to permit fabrication of different types of tanks on the same line with only minor adjustments in procedure. Maximum output of 5000 tanks per 8-hr shift has been obtained. Major joints are seam welded two sides at a time. Minimum handling is required.

MAY SELL URANIUM CONTAMINATED SCRAP—P. 125
Release of uranium contaminated steel scrap to commercial scrap channels has been recommended by a division of the Atomic Energy Commission. Such scrap will not affect health or the steel products made from it. AEC will save money now spent in shipping, gain from sale of scrap.

LARGE FORGINGS CUT FABRICATION COSTS—P. 128
Aircraft industry analyses show how much will be gained through availability of large forgings, such as those the huge presses the Air Force is sponsoring can produce. They will permit weight reductions, cut assembly labor and equipment costs, reduce machining, assure greater structural strength.

NEXT WEEK—AUTOMATED FORGING LINE CUTS COSTS
A completely automated crankshaft forging line at Dodge Div., Detroit, has virtually eliminated manual handling in production of semi-finished crankshafts from SAE 1045 steel billets. First automotive installation of its kind, it may set the pattern for further mechanization in the industry.

MARKETS & PRICES

FABRICATED STEEL PRICES FOLLOW ROAD UP—P. 59
New pricing pattern beginning to take form after increases in labor costs, steel prices. Some estimate average is up 8 to 10 pct, others say more. Varies according to labor-materials cost ratio. Fabricators edging toward normal buying, shy away from conversion and foreign steel. See better supply in '53.

LAKE ORE BOATS RUSH TO BEAT WINTER FREEZE—P. 64
The Great Lakes iron ore boat fleet is working feverishly to make up losses caused by the steel strike before winter sets in. Shipments are still 20 million tons behind 1951, but it is hoped that shortages at the furnaces this winter, can be averted. New ships and extension of summer loads help.

CIVILIAN STEEL ALLOCATIONS PARED DOWN—P. 67
First quarter military, AEC needs to be met—but civilians will get 75 pct of fourth quarter share. NPA lays blame on steel strike. Output for first quarter put at 22,157,000 tons—a record. Copper, aluminum to be doled out in same amounts as fourth quarter. Surplus aluminum will be stockpiled.

COAL HIKE BOOSTS STEEL COST 60c TON—P. 151
It will cost the steel industry between 50¢ and 60¢ per ton of finished steel to pay for wage increases granted coal workers by northern coal producers. Coal costs will rise between 37¢ and 40¢ per ton. Quick settlement of the coal dispute was motivated by desire to avoid further labor trouble.

PRICE SHENANIGANS CONFUSE ZINC MARKET—P. 154
Latest ups and downs in zinc have buyers in a bit of a dither. First, there seemed to be no reason to up the price ½¢. Then came a hint the government might do some stockpiling. Despite this possibility, one smelter cut back to 14¢ again. Consumers wanted to see where it would end—so demand fell flat.

SCRAP MARKET STAYS ON FAIRLY EVEN KEEL—P. 158
The scrap iron and steel market was showing no violent fluctuation as trading was healthy in most steelmaking centers. Steel mill buyers, backed by tall stockpiles, were not avidly hunting scrap but movement continued reasonably brisk. Cast iron grades of scrap showed little increased activity.

"No other furnace could do the job"

This foundry casts parts for corrosion- and heat-resistant valves . . . pressure-tight castings of hard-to-handle nickel alloys and stainless steels.

Requirements are *tough*. Shapes cast are complex, with complicated coring. Analysis must be controlled within extremely close limits, must be absolutely uniform throughout the melt. Because any variations in composition might be a starting point for corrosion, welding repairs are undesirable.

Ajax-Northrup high frequency furnaces meet these requirements with ease. Pouring temperatures are controlled within ± 20 deg.F., each melt being poured at the point of optimum fluidity. Analysis of every element is controlled within 0.25%, carbon kept as low as 0.03%, when desired. Uniformity is assured by the inherent stirring action of induction furnaces.

The resulting castings are so consistently sound that *repair welding has been eliminated!* Parts with even minor defects are so few that they are scrapped instead of being welded.

Output is high. With never more than one 600-pound furnace in operation, on a two-shift basis, this small foundry pours almost 250,000 pounds of high-melting point alloys a month! No wonder the foundry superintendent says "No other furnace could do the job."

Ajax-Northrup can do a better job for you, too. Write us today for details.

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FOR HEATING AND MELTING

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THE IRON AGE

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A Privilege

THE Thorndike-Barnhart dictionary defines a privilege as "a special right, advantage or favor." Today, privileges are something almost in limbo. We pay for most everything—if not in money then in trouble and worry.

There is one big privilege that doesn't cost a cent. We, as a nation, have failed to use it properly. We have talked about it; we have listened to arguments as to why we should take advantage of it. It is one of the greatest treasures we have, yet we have either been too busy or too forgetful to realize how worthwhile it is.

We refer, of course, to our right to vote. That is a special right which millions in countries behind the Iron Curtain would like to exercise. They would like to vote as they think. They don't and they can't.

We can register as we please and vote as we please. There is no one telling us what to do, threatening our families or using our vote to stamp out liberty. Some years ago 85 pct of the people eligible to vote took advantage of their special right, their advantage. In 1948, only 51 pct voted in our national election.

The special right, favor and advantage of voting was fought for. It didn't just happen. It is a God-given privilege incorporated in our way of life. If we are to remain free we must use it not once in a while but always.

Our right to vote—if exercised—protects our freedom of speech, our freedom of religion. It means security for our person and our property: it means we govern ourselves through our representatives.

We have not used this privilege very well in recent years. Yet we have been ready to cry about what is happening in Washington. We argue about our taxes, the trend toward socialism, the corruption in government and the looseness of morals and integrity in politics.

When people do not go to the polls and vote the "machines" like it. When people do not exercise their privilege of voting skullduggery can and does flourish. Let us use this special right in the coming elections and urge others to do so. If we don't then we must take the consequences.

Tom Campbell

Editor

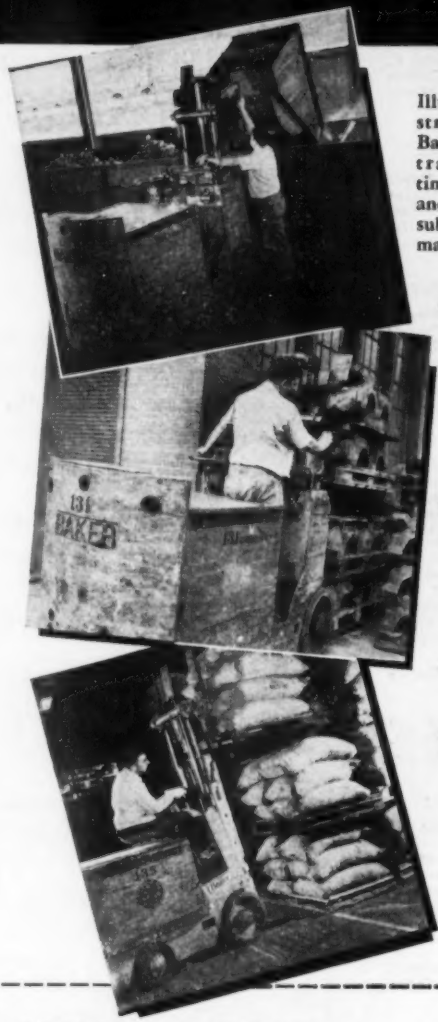
Westinghouse saves in excess of $57,000 per year by FORK TRUCK HANDLING

A fleet of fork trucks including Bakers, coupled with intelligent planning and material handling engineering, enables Westinghouse Electric Corporation to cut handling costs more than $57,000.00 per year at its huge East Pittsburgh works. Savings in which the Baker Trucks participate, include:

- **$12,000.00 warehousing raw materials in the molded materials section**
- **Another $12,000.00 handling finished molded products**
- **$9,000.00 on one scrap handling operation**
- **$7,500 by handling castings on pallets in yard storage**
- **100% added storage capacity in molded materials warehouse**
- **Doubling capacity of drum storage space in yard**

These savings were made possible by replacing manual handling and other slow methods with efficient fork-truck unit-load handling. In some instances Westinghouse devised special pallets and containers to achieve greatest speed and efficiency from their versatile Fork Trucks.

The Complete Story is documented in Baker Case Study Report No. 272. Use this coupon to get your free copy.



Illustrated above is a special stringer pallet which enables Baker Fork Trucks to tier and transport drums four at a time, doubling storage capacity and speeding these operations substantially by eliminating manual methods.

This method of handling scrap saved $9,000.00 in one year. Driver merely operates controls—the truck does the work.

Handling castings in yard storage on pallets with Fork Trucks saves $7500.00 per year over former methods—and multiplies storage capacity by tiering.

By palletizing bagged materials for fork truck handling, tiering to warehouse ceiling more than doubles storage capacity. This method cuts handling costs $12,000.00 per year.

THE BAKER-RAULANG COMPANY
1227 West 80th Street, Cleveland 2, Ohio

☐ Please send Westinghouse Case Study Report No. 272.
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Baker® INDUSTRIAL TRUCKS

Dear Editor:

Letters from readers

Crack Detection

Sir:

In your Aug. 28 issue, p. 111, you describe a new method for nondestructive crack and flaw detection.

We are interested in these products and methods and would appreciate it if you could put us in touch with whomever makes these products and can give us more information on their use.

C. O. MENGSHOL
Chief Chemist

American Radiator & Standard Sanitary Corp.
Richmond, Calif.

These products were developed by the Physics Research Group of Manchester Oil Refinery Ltd., Trafford Park, Manchester 17, England.—Ed.

Clarification

Sir:

On p. 137 of your Aug. 14 issue the statement was made that the welding of manganese steel dipper teeth is done with a copper-molybdenum-manganese electrode. I assume that the writer of this article really means a copper-molybdenum-manganese steel electrode, though nowhere is such a meaning even implied.

I will appreciate your checking this point and if the information is available advising the approximate composition of the metal deposited from this electrode.

R. H. ABORN
Asst. Director of Research

U. S. Steel Co.
Kearny, N. J.

The composition of the electrode is 1 pct copper, ½ pct molybdenum and 14 pct manganese steel.—Ed.

Pertinent Question

Sir:

I own several very large iron ore deposits of high grade and of exceptional purity in the state of Montana. I have contacted most of the larger steel companies direct by mail and get the usual answer from all, that they are not interested at this time but perhaps in the future.

As an American mining man, I wonder why so many taxpayers' dollars are being used in various far corners of the earth to secure (in most cases) an inferior grade of iron ore. And all the while we have in Montana extremely favorable domestic and economical conditions for operations.

I noted with great interest when our Congress wrote into the record something to do with placing heavy industry (which must include the production of steel, etc.) in a less vulnerable location than at present. As I remember, they suggested the Rocky Mountain area in the vicinity of the Montana iron deposits. There we have fuels (gas and coal), electric power, water, lime rock flux, manganese and other alloying metals.

Could you, for just a few seconds, put yourself in my position. And then you will probably sympathize with my friendly criticism and bewilderment of why our government finances, subsidizes and favors exploitation in foreign countries, knowing well that each year same becomes more risky. Even the Canadians shall some day want to stop us from hauling off their natural resources.

May I ask what you would do if you owned such properties as these situated in Montana?

N. A. WHITTAKER

Seattle

We sympathize with your predicament. But since steel companies are primarily in business to earn money there must be some economical factors not apparent to us.—Ed.

Noncorrosive Flux

Sir:

We would appreciate further information as to whom we could contact relative to the item on a noncorrosive flux, as mentioned on p. 147 of your Aug. 7 issue.

J. P. RUCHINSKAS

Telechron Dept.
General Electric Co.
Ashland, Mass.

For more details on the noncorrosive flux see the June issue of the "Bibliography of Technical Reports" available from the Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C.—Ed.

Automation

Sir:

Can you tell us more about automation in the forging line, as mentioned on p. 87 of your Sept. 4 issue?

E. M. GALLAGER
General Manager

Hammond & Irving, Inc.
Auburn, N. Y.

Watch for a special article on this subject in October.—Ed.

80B30

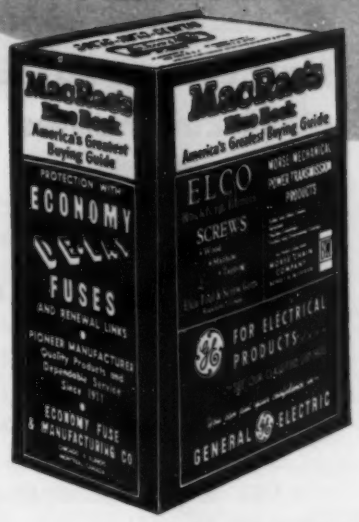
Sir:

Please send me tear sheets of the interesting article entitled "How Good Is 80B30?" which appeared on p. 102 of your June 26 issue.

E. WALDEN
Metallurgical Research

Lockheed Aircraft Corp.
Burbank, Calif.

PRIME MOVER of INVENTORIES



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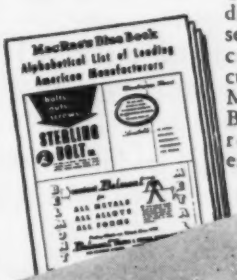

This handy address directory, at left, sent free to all recipients of the current edition of MacRae's Blue Book, has been received with enthusiasm.

For single copy costs and advertising rates, write

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AT E. C. ATKINS & CO.

A Lindberg Induction Heating Unit brazes carbide tips on circular saws

E. C. Atkins & Co., Indianapolis, Indiana, manufacturer of saws has joined the long list of companies using Lindberg Induction Heating Equipment. Atkins uses a 5 KW unit plus a specially designed fixture to braze carbide tips on large circular saws.

This unit as well as many other Lindberg units in all sections of the country are piling up good production records . . because they are ruggedly engineered and built to minimize irritating breakdowns and expensive work stoppages.

These construction features tell an important part of the story:

Conditioned cooling . . Temperature controlled water cooling eliminates condensation on high voltage parts.

Checklites . . A system of indicating lamps instantly reveals any abnormal operating conditions . . simplifies servicing.

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Long-life industrial tubes feature shortened internal structure . . Kovar metal-to-glass seals . . heavy walled anodes.

Sealed tank capacitors are hermetically sealed against dirt and dust . . require no servicing or refilling.

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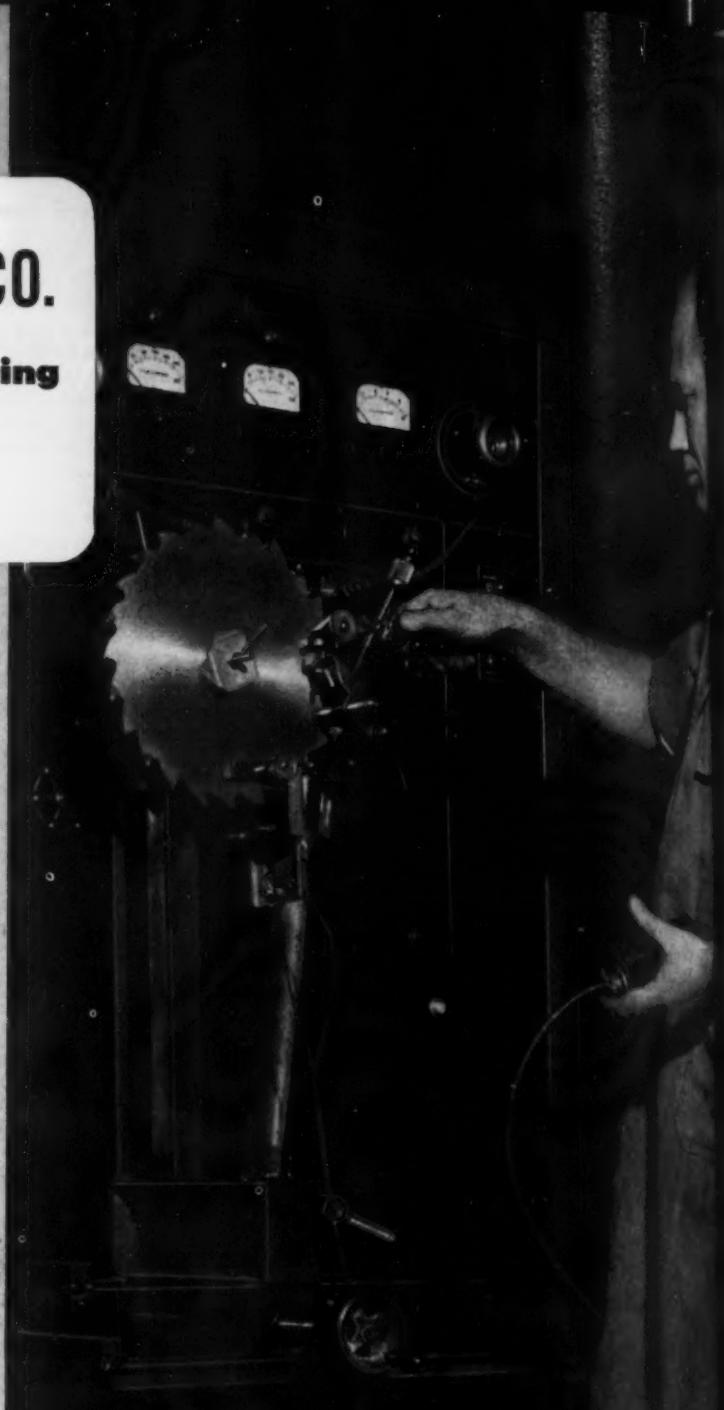


LINDBERG

HIGH FREQUENCY DIVISION

LINDBERG ENGINEERING COMPANY,
2452 West Hubbard Street, Chicago 12, Illinois

Fatigue Cracks

by Charles T. Post

High Ball

Our spies have just come in with some more dope on that 100,000th-Freight-Car-Since-World-War-II which the Eastern Railroads have on display in the main passenger room of Grand Central Station.

Last week the Railroads invited representatives of the steel industry and the press to a hoe-down in which they gave the car full-dress inspection. Right off the bat, one of the technical editors noticed that the car had aluminum trucks, wheels, etc., and discreetly confronted the railroad representative with his discovery.

The r.r. man blushed slightly, but denied that the aluminum was put there to embarrass the steel industry. "Most of the station floors where we're going to exhibit the car couldn't stand the weight of steel," he explained.

Almost immediately, the r.r. man was embarrassed again.

"That car has no tie rods," another press representative pointed out accusingly. "The railroads are unfair to hoboes. This should be reported to the hoboes' union."

At this point a beady-eyed little woman who had wandered into the crowd spoke up. "That remark," she boiled, "sounds Communistic. I'm going to turn you in to the F.B.I."

For the rest of the afternoon, the gentlemen of the press made no more jokes, and the r.r. man basked in compliments for one of the best public relations jobs of the year.

Mail Order

For months, Clem Caditz, president of Chicago's Northern Metal Products, wrote us regularly. We passed along his comments on the trials and tribulations of a metal stampings manufacturer to the readers. Last week, we were wondering why we hadn't heard from Clem recently when someone handed us a copy of *Time*, opened to the section on Art. The article explained everything.

Clem (whom *Time* called a "tool and die manufacturer") had developed an overpowering enthusiasm for Matisse prints. He was unhappy, though, because he couldn't afford an original. Finally, with the same directness with which he weans cold-rolled sheet quotas from steel mills, Clem wrote Matisse: He had little money to spend. What could the master do for him?

Back came a warm letter from the artist, and later an original sketch.

It just goes to show that there is no obstacle too great for the man who can get scarce steel from a hard-hearted mill.

Wired

If you'll look at the merchant wire price table on page 169, you can understand the confusion of the European gentlemen who called the news desk and plaintively asked, "How could you possibly have a column of barbed wire?"

"The reference is to base column, of course," said the editor.

"Of course," murmured the European.

Sometimes, we're not so sure we understand steel prices, ourself.

Puzzlers

We were somewhat relieved to see that we got the puzzle into last week's issue. And a good thing too, because G. C. Brown and the boys at Korhumel Steel & Aluminum Co. have been waiting patiently for it to appear. They called a few minutes ago to see if they had the right answer. Their answer of 5.15 ft checks with the answer we have so they can rest easily now.

C. S. Jones, Jr., Electrol Inc., has come up with the answer to the trench puzzle of a few weeks ago.

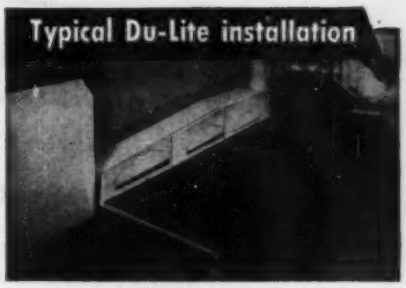
Bernard F. Kuby, The Advertising Corporation, thinks that you will be interested in this one. You have twelve silver dollars which look exactly alike. One, however, is a counterfeit. The job is to find the phony and determine whether it is lighter or heavier than normal. The only equipment on hand is a set of balance scales. The answer must be found in no more than three weighings.

On any steel blackening problem

DEPEND on DU-LITE for a Superior Finish

Courtesy The Poly Choke Co.

Du-Lite gave this part with its complicated knurls, slots, threads, etc. a fine rust-resistant durable black finish. It is typical of many other parts, small and large, which have been black oxidized by Du-Lite for many years. Moreover, Du-Lite meets most individual and government specifications including 57-0-2C for Type III Black Oxide finish.



Du-Lite installations are simple, compact, easy to operate. Du-Lite equipment can be tailored to fit production requirements on all types of jobs with a maximum of speed and economy. Du-Lite also makes a complete line of cleaners, strippers, wetting agents, passivating agents, rust preventatives, burnishing compounds etc. for any metal finishing application.

See your nearest Du-Lite Field Engineer or write for more information.

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Du-Lite
METAL FINISHING SPECIALISTS

Here's More Proof of B&W Allmul Firebrick Performance

BILLET HEATING FURNACE

"ALLMUL more than doubles life of lining"

A large manufacturer was faced with high refractory maintenance in the discharge zone of a side-discharge billet heating furnace. Combustion chamber temperatures were 2600F-2700F. Production was high—a billet was discharged every 30 seconds. Thermal shock and high temperatures caused various semi-mullite refractories to fail in 5 to 6 months. Then this area was relined with B&W Allmul Firebrick. Result: Allmul stood up for 13 months—2 to 2½ times as long!

ELECTRIC FURNACE ROOF

"ALLMUL lasts 3 to 6 times as long"

In a six-ton electric furnace, handling 15 tons of stainless steel per charge, super duty firebrick had to be replaced every 20-40 heats. Pouring temperature of the metal was in excess of 3100F, with higher temperatures attained in the furnace during periods of oxygen introduction. The owner installed B&W Allmul Firebrick, hoping for a life of 80 heats. Allmul in the first roof lasted for 122 heats—42 more than hoped for. The second roof of Allmul went to 131 heats! Result? Additional orders for B&W Allmul.

INDIRECT ARC FURNACE

"All furnaces converted to ALLMUL after comparative tests"

A large company making alloy steel castings has several indirect arc furnaces melting various alloys, with pouring temperatures varying from 2700F to 3100F. With highest temperature alloys, semi-mullite brick burned out in 6-10 heats. B&W Allmul, which cost approximately the same, showed no appreciable wear after 20 heats. On alloy steels in general, this customer reports far less slag formation (an indication of reduced refractory wear) with Allmul than with any other refractory used. Result: All furnaces are being relined with B&W Allmul Firebrick.

FORGE FURNACE HEARTH

"ALLMUL lengthens life, keeps dry hearth"

A drop forge company was faced with this problem on its 72" wide slot-type furnace operating at 2350F-2400F: Low cost refractories gave soupy slag on the hearth, affecting product quality and die life. More expensive refractories, including chrome plastic and chrome firebrick, eliminated liquid slag, but their life was so short that their use could not be justified economically. A completely new hearth was installed consisting of 4½" of Allmul on top of 2½" of B&W Junior and 5" of B&W IFB. Result: Completely dry bottom; easy removal of scale; *and Almull was in good condition after 5 months of operation.* Based on this performance, additional Allmul hearths were ordered.

Yes, the facts about B&W Allmul Firebrick speak for themselves. This fused mullite brick is proving its economy in dozens of severe service applications. The reason? A unique combination of refractory properties—high hot load strength, high resistance to spalling, good volume stability, a high melting point of 3335F—all resulting in lower furnace costs. Want more data? Write for Bulletin R-29.

BABCOCK & WILCOX

THE BABCOCK & WILCOX CO.
REFRACTORIES DIVISION
GENERAL OFFICES: 161 EAST 42nd ST., NEW YORK 17, N.Y.
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R-4350

B&W REFRACTORIES PRODUCTS—B&W Allmul Firebrick • B&W 80 Firebrick • B&W Junior Firebrick • B&W Insulating Firebrick B&W Refractory Castables, Plastics and Mortars • OTHER B&W PRODUCTS—Stationary & Marine Boilers and Component Equipment... Chemical Recovery Units . . . Seamless & Welded Tubes . . . Pulverizers . . . Fuel Burning Equipment . . . Pressure Vessels . . . Alloy Castings

The Iron Age
FOUNDED 1855

THE IRON AGE Newsfront

► Look for reactivation of World War II manganese recovery plants as government steps up stockpiling program. Small miners are encouraged to mine low grade Western deposits and government is buying as low as 15 pct ore for resale to industry. An economical process of extraction from low grade ores is still a stumbling block.

► Twelve volt electric systems may be featured on some 1953 cars. New high compression engines with compression ratios above 8 to 1 need the higher voltage. At least one car will have an engine which will exceed this compression ratio.

► Natural source of cryolite (Greenland) is expected to be depleted within a generation. Soaring demand for this vital ingredient in aluminum production will be met by synthetic cryolite.

Here's the hitch. The synthetic product requires fluorspar of which reserves are also limited. (U. S. reserves could support 1950 consumption rate 15 years.) Additional demands for fluorspar are expected to be met by deriving fluorine from abundant phosphate rock by processes now being developed.

► Power steering, big hit in the luxury automobile field, may turn up soon on farm tractors. A big maker of steering apparatus thinks it's a natural to reduce operator fatigue from a long day at the wheel.

► Fabricated structural steel prices may jump 8 to 10 pct, some industrial sources say. Base price increase in domestic steel is largely responsible. Fabricator's interest in foreign steel seems to be falling off.

► Porcelain enamel coatings for bulkheads have arcused considerable interest among Navy designers. Navy acceptance depends on flame barrier and ballistics characteristics of the enameled metal. Tests are underway and preliminary reports are good.

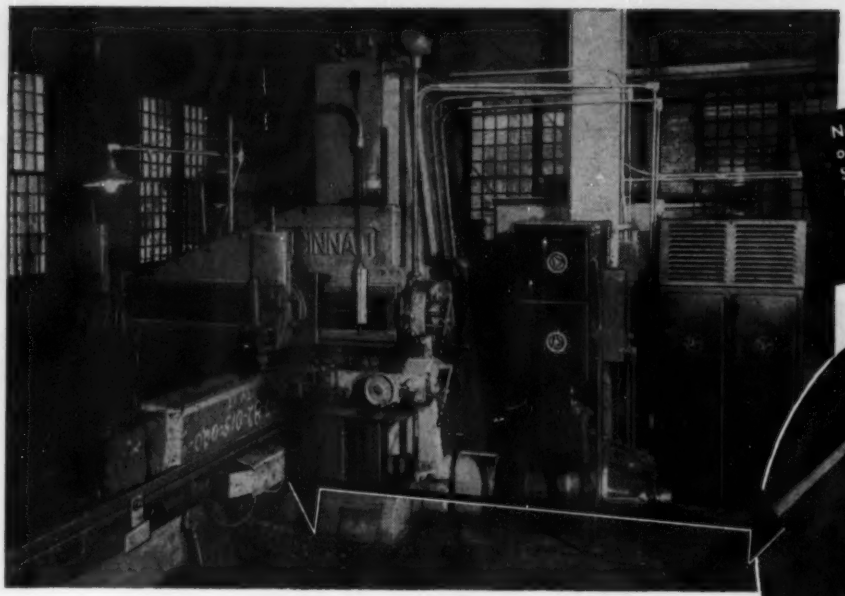
► Auto production is coming back--but slowly. An estimated 400,000 total for September is today's guess.

► Steel sales people expect to be doing a selling job in nearly all lines at the end of the first quarter. Light and merchant products may require selling in the last quarter of this year.

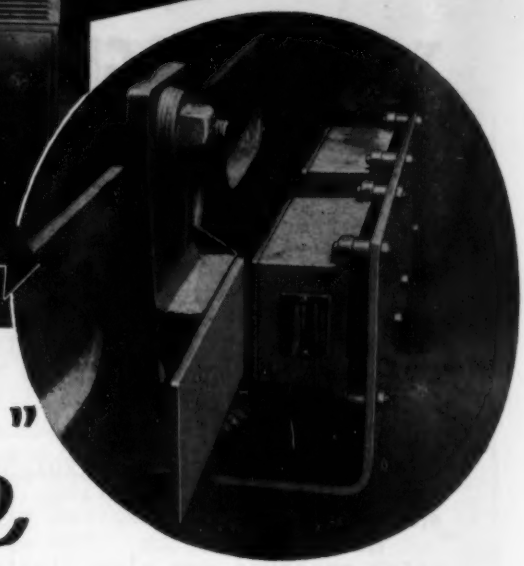
► A big problem facing one maker of large hydraulic presses for the Air Force heavy press program is how to shrink the tie rods. These rods, eight to a press, are 50 in. in diam, weigh 74 tons and are 74 ft long. Ordinary shrinking by heat or prestressing is not thought possible.

► Use of steam catapults of British design on new Navy carriers will save money. Using ship boiler steam, it will cost 50¢ per jet launched. The old powder charge method of catapulting cost several hundred dollars per aircraft launched.

► OPS is getting complaints that stainless mills are marking up the product 4.7 pct on total cost, including packaging, boxing, etc. OPS says the 4.7 pct markup may be applied only to base plus extras that are related to the character of the product--not to extras such as packaging.

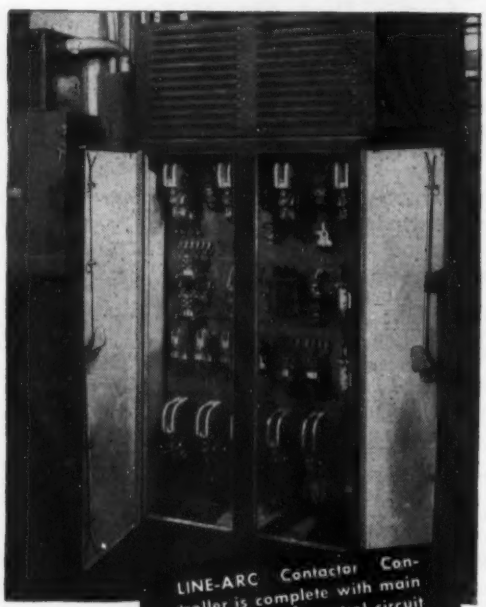


Note the air-gap between the operating-vane and the Limit Switch units. The planer has just finished a cut and will be automatically returned for another cut as this vane passes over the "return" limit switch face.



"Stop and Reverse"

all done automatically by EC&M *Air-gap* Impedance-electronic Limit Switches



LINE-ARC Contactor Controller is complete with main line and fused control circuit knife switches and includes all protective features necessary for the safe operation of planer motors.

Operating silently through an air-gap (without impact or shock), these Impedance-electronic Limit Switches automatically reverse the planer at the end of each stroke.

For this operation, as well as controlling other heavy machinery, these Impedance-electronic Limit Switches offer the advantages of accuracy, freedom from maintenance, and savings in production costs.

One for "return" and one for "cut," the switches are mounted on the side of the planer-bed. They are completely enclosed and protected by a sloping cover which diverts chips to the floor. Two steel operating-vanes, ⅛-inch thick, are fastened at opposite ends of the planer table. The location of these vanes is adjustable to suit the length of stroke desired.

Ask for Booklet 927 describing these unique switches. Let's discuss their possible application to your requirements.

E&M

THE ELECTRIC CONTROLLER & MFG. CO.

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CASTING: Trouble With Heavy Stuff Only

Spectacular shortages in heavy castings for tanks and heavy presses take limelight . . . But industry is generally sound . . . How's supply? . . . Why the shortages?—*By T. Metaxas.*

Today in most defense plants fabricating battle tanks, electric arc welders string beads of molten metal along the seams of sections for gun turrets and hulls. Perhaps in the same plant one assembly line disgorges more finished tanks while welding and positioning time is held down to a minimum. This is the tank line using 1-piece castings for hulls and for turrets.

Army Ordance claims domestic heavy steel casting capacity is too limited to meet full demand for 1-piece sections and of necessity its orders must be restrained.

Presses—From Duesseldorf, Germany, comes a mammoth casting for the Air Force's heavy press program—and a government team scouts European heavy casting capacity for future orders.

These are the few dark brush strokes on an otherwise clear steel castings picture. That tanks are still being made with welds is no indication of any overwhelming shortage of heavy casting capacity.

It is the consensus of the industry that it will not stagger under normal rearmament demand for castings. Capacity for light and medium castings is adequate but the snarl-up exists in the very heavy casting field.

Founders are bridging this gap between an abnormal demand and capacity to produce. After Korea, expansion totalled $38 million on fast tax writeoffs alone. Yet it is true that capacity for the very heavy castings is limited in America. The need arose too suddenly and was an innovation.

Even on smaller, but nevertheless heavy, 1-piece hull and turret castings, the bulk of steel foundries did not have the facilities to produce. First of all they did not have the steelmaking furnaces to pour melts of this mass. To get a 40-ton finished casting nearly 60 tons of steel must be poured, going into runners and risers, reservoirs tapped by the central mold to compensate for a 3 pct shrinkage of cooling steel.

Giant cranes to move this bulk were not available, were difficult to buy even when sought. Heat treating furnaces would not contain the castings.

Fortunately several foundries doing heavy work for such industries as railroads were equipped to take the burden of tank castings. To handle demand adequately they had to expand considerably.

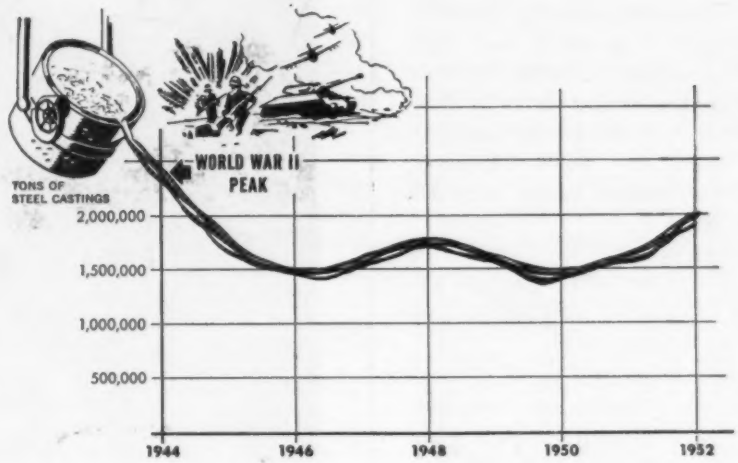
There is an outstanding sentiment of optimism in the industry. Confusion over military orders has clarified to a better degree. Production outlook is far less murky than last year. Delivery dates on castings have shortened substantially.

From scrap to ferroalloys, materials problems have eased but are still obstacles. Although still a painful deterrent to expansion, delivery dates for foundry equipment have improved. Equipment ordered many months ago is now being put into service.

Generally, backlog of orders for heavy castings is large and the threat of total war poses a solemn fear. Emphasis on a land army with its equippage of heavy armor could put a ripping strain on the industry. But emphasis on defense through air power would lighten the burden.

The industry has expanded its production since Korea. Shipments are running over 2 million tons for 1952. Last year when war-sprouting industries exerted robust demand on castings, total

Trend of Steel Castings Output



—Special Report—

Continued

shipments were 2,050,054 tons. This was almost equivalent to the 1944 war shipment summit of 2,445,000 tons.

Both light and heavy casting plants are operating at near capacity. But as founders absorb war orders there is a proportional cut in how many civilian orders they can take.

Much of the casting industry's production still is directed at the expanding steel industry and railroad freight cars and equipment.

Growth — Unlike other plants capable of producing war goods similar to their civilian products, the smaller foundry seeking to make heavier castings finds costs of building up original facilities prohibitive. Expansion must often involve a new plant. And there is always the nettlesome consideration that war markets sometimes blow away for years.

Most trouble in availability of castings can be found in the 10,000-lb and over class. Although grey iron castings are plentiful today, a squeeze remains in the 3000-lb class and over.

Production tonnage of castings even when capacity stays constant can slip when war pushes foundries into making heavier, more complex castings under more rigid military specs. Working time may increase; tonnage output may slide.

Geographical location sometimes rears up to inhibit fuller use of foundry capacity. Ponderous weight of products and high freight charges, inherent in their shipping, forces foundries to cluster near manufacturing centers they want to serve. Average foundry shipments range from 200 to 250 miles.

Foundries say they need 90 days lead time after pattern approval on alloy castings, and about 60 days on steel.

It's estimated half of all defense production hinges on castings. They are integral parts of the big guns, the gun carriages, vehicles, ships, turbines, tanks, atom plants.

—Research—

Titanium Alloy Explodes Into Production

Engineers agree that improved high-temperature alloys will mean jet engines with more punch. For instance they figure that if the operating temperature of jets could be raised as much as 800°, engine power would increase three-fold. Maximum operating temperature range today is 1350-1500°F.

Kennametal, Inc., Latrobe, Pa., producer of cemented carbides, believes it has developed a high-temperature metal carbide that shows promise of enabling jet engineers to step up operating temperatures by several hundred degrees. Full potential of the material, called Kentanium, is believed to be 1600-1800°F.

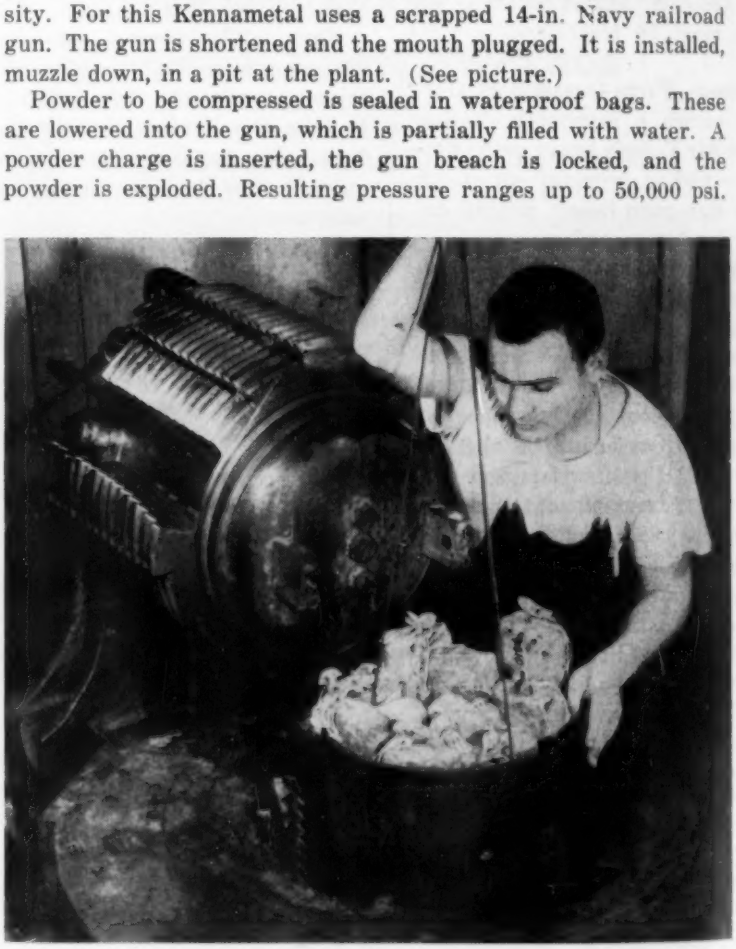
Kentanium, a titanium carbide, is now in development by major manufacturers of jet engines and at Wright Field. Test application is as turbine blades. Results are not available.

Principal ingredient of Kentanium is pure titanium carbide. Nickel is used as a binder in amounts ranging from 10 to 30 pct, according to grade. Also included is 1-2 pct columbium. Cobalt was used as an auxiliary metal, but nickel proved superior.

Other potential applications for Kentanium are nozzle vanes for jet engines and valves in high-powered reciprocating aircraft engines. A titanium carbide turbine impeller was designed to operate at inlet temperature of 2000°F. Another severe application is a pressure reaction vessel which has repeatedly withstood internal pressure of 30,000 psi at 2300°F.

A unique step in the production of Kentanium is the method of pressing the metal powder into blocks or ingots of uniform density. For this Kennametal uses a scrapped 14-in. Navy railroad gun. The gun is shortened and the mouth plugged. It is installed, muzzle down, in a pit at the plant. (See picture.)

Powder to be compressed is sealed in waterproof bags. These are lowered into the gun, which is partially filled with water. A powder charge is inserted, the gun breach is locked, and the powder is exploded. Resulting pressure ranges up to 50,000 psi.



COAL: Will WSB Approve Pay Hike?

Northern bituminous operators give Lewis fat wage hike . . . WSB must now find way to justify it under wage formula or reject it . . . Amounts to about 31¢ an hour—*By A. K. Rannells.*

Whether a 1952 bituminous coal strike had been averted appeared this week to boil down to whether the Wage Stabilization Board would approve an apparent over-ceiling pay boost to northern miners of John L. Lewis' United Mine Workers.

Prevailing Washington opinion, in government and out, was that the WSB would find ways to stretch its regulations so as to be able to approve the pact tentatively agreed upon by the union and the Bituminous Coal Operators Assn.

There was also a lesser question, hinged upon the first, as to whether southern operators would swallow a contract based upon that accepted by the northern operators.

But the Southern Coal Producers Assn. was seen as being rapidly pushed into the position where it would have no alternative.

Operators of anthracite and western bituminous mines already had previously agreed to accept whatever terms were decided upon between the UAW and the BCOA.

$1.90 Per Day—These were announced last Saturday as an increase of $1.90 in basic daily pay. Production would also be tapped for an additional 10¢ per ton for the miners' welfare fund.

Other changes in the contract were said to involve no further cost increases, meaning that there would be no further demand at present for a shorter work week.

But the operators figure that as it stands the new agreement will cost the industry an increase of about 31¢ an hr or about 40¢ a ton when the contribution to the welfare fund is added to the $1.90 per day or 23¾¢ per hr miners actually get.

It is further figured that the new pay scale represents an increase of about 10.4 pct in average earnings. Based on the Bureau of Labor Statistics cost-of-living tables—the yardstick usually used by the WSB—it is further computed that the miners would actually be entitled to perhaps as much as 6 pct.

On this basis, this would leave a gap of about 4.5 pct to be bridged by the WSB.

Loopholes? — But, remembering the "steel stretch", there is little doubt that enough loopholes can be found to permit official approval.

Such feeling is so prevailing in official circles that Defense Solid Fuels Administration lost no time in revoking its emergency order creating a coal stockpile.

Backed up by a supporting order from the Interstate Commerce Commission to transportation agencies, the order covered all unbilled and unsold coal at struck or strike-threatened mines, captive as well as commercial, to cars on sidings, coal at scales and at other points.

It was estimated to freeze the movement of about 1 million tons, enough to keep steel and coke plants operating three days.

A DSFA spokesman said that currently the agency did not plan to reissue the freeze order in the event that the southern operators refused to go along on the terms of the northern agreement.

No Concern—The reason, it was explained, is that southern production represents roughly only about 25 pct of total production. Providing there is a no hitch in the northern and western settlement, the unionized bituminous industry would be producing at 75 pct and anthracite at 100.

Coupled with the Bureau of Mines estimate that something like 80 million tons, or an 85-day supply, are already above ground and in the hands of consumers, the DSFA see no reason for concern at the moment.

Steel production needs, including operation of coke ovens, would require about 295,000 tons daily. Production of electric power would require about 245,000 tons daily, while railroads would eat up something like 80,000 tons every day.

Beats the Odds—Mr. Lewis is credited with masterful maneuvering to make the best of what was originally regarded as an unhealthy bargaining position. Because of mountainous coal stockpiles above ground a strike would have had to be a long one to really hurt. Not only that but coal had been selling at below ceiling prices for many months and many operators were not in a strong position to absorb a substantial wage hike. He capitalized on industry's desire to avoid another major strike and split the coal ranks.

ACCORD: An interim agreement for continued mining of anthracite coal was negotiated by Edward Fox (left), spokesman for hard coal producers and John L. Lewis, UMW president.

RUSSIA: Pushes Industry Merger

Pressures Poland, Czechoslovakia to combine heavy industry in Upper East Silesia area . . . Would exploit mineral deposits, rich coal reserves . . . Want to cut drain on Soviet industry.

Soviet Russia is bringing more pressure on Poland and Czechoslovakia to merge heavy industries in Eastern Upper Silesia and the Moravska Ostrava district, according to reports reaching IRON AGE European correspondents. A group of Soviet experts is believed working on the scheme, and mixed Polish-Czech commissions and engineering groups have been appointed.

Proximity of coal and iron ore deposits, plus lead, zinc and copper, is the big reason for project. The Oder River and a canal network provide waterways between the various deposits, and road and rail transport are good. Work on the Oder-Danube Canal, halted by World War II, has been resumed. An important dam and waterworks on the Upper Vistula near Katowice will relieve the water scarcity in Upper Silesia and increase power output of the district.

"West Combine"—If the project goes through it will give a big boost to Soviet supremacy in Eastern Europe, bringing basic changes in the economy. The proposed "Oderbuss" or "West Combine" would cover estimated coal deposits of 268,000 million tons—almost a third of Europe's total coal reserves. Output goals in 1955 are, in millions of tons: Coal, 90.77; pig iron, 3.50; crude steel, 4.50; finished steel, 3.20.

HIGH LEVEL: West German Chancellor Konrad Adenauer (right) and Italian Premier Alcide de Gaspari discussing an aspect of the Schuman Plan. Representatives of the six Western European nations, including France, Belgium, Luxembourg and the Netherlands as well, met at Luxembourg in an attempt to thrash out some of the economic problems posed by the pooling of steel and coal resources of these countries.

Plan is the result of a long-term policy of creating a powerful industrial combine in Russia's western satellites, based on their rich coal deposits. Idea is to lessen demands on the Soviet Union's industrial potential and get more material production from these Red satellite countries.

Expanding—East Europe's industrial output continued its swift growth in first quarter 1952, reports United Nations Economic Commission for Europe.

Output was about 20 pct over the same period in 1951, just about meeting its goals. Behind-schedule production occurred mainly in basic industries: Hard coal, pig iron and steel in Czechoslovakia and Poland; heavy machinery in Czechoslovakia, East Germany, and Hungary; and fertilizers in East Germany. Output of each rose sharply, as did electric power, but still not enough to forestall shortages.

Interesting to note is that there have been recent press reports of inaccuracy in Russian industrial reports from men in charge of plants. It is said that if production falls behind or units are incomplete, plant managers will submit reports up to proposed goals since they feel nobody bothers to check them.

Belgian Car Import Curbs Asked

The Belgian Government's Economic Committee has recommended that imports of complete private cars into Belgium should cease Oct. 1, 1953. Apart from token quantities—the figure mentioned is 100 cars per year of each make—the only imports allowed will be cars in a knocked-down state for assembly in Belgium. These will have to incorporate 25 pct of the cost in Belgian labor and material.

The Belgian market took 12,457 complete British cars in 1950. Last year, under the stress of armament work and in the face of intensified German competition, the number was reduced to 7618. If approved, the decision would put British cars at a disadvantage against American models, nearly all of which are already assembled in Belgium.

Custom Seal Agreement Reached

United States and Canada have agreed to begin the joint use of customs seals on rail carload shipments of goods moving in bond between ports of one country via territory of the other.

Yellow seals stamped "U. S. Customs — Canada Transit" will be placed on carloads of in-transit merchandise at U. S. ports of exit to Canada. The Canadians will place green seals marked "Canada Customs—U. S. Transit" on cars at Canadian ports of exit which are going to the U. S.

FABRICATING: Costs Up, Prices Up

New price pattern shaping up after boosts in steel prices and labor costs . . . Increase totals over 8 pct, depend on type of job . . . Supplies seen improving—*By K. W. Bennett.*

When steel bills began coming to fabricators last month bearing notices that they were only "partial" and that follow-up bills would include the expected price boost, fabricators were not caught unaware. They'd drawn up some plans of their own.

But it wasn't until last week that patterns began to take shape. It appears the basic steel price increase, coupled with advances in fabricators' labor costs, will push up the end price of fabricated structural steel at least 8 pct.

While some estimate the average industry climb at between 8 and 10 pct, others felt that in lines requiring a great deal of fabrication there would be higher costs to force the average even higher. In one case, increased labor costs alone were put at 8 to 10 pct.

Will Vary—Individual projects would be affected by the labor-materials cost ratio. A job requiring much fabricating for a small amount of steel would be higher, relative to old prices, than would one where material cost is a more healthy portion.

Most users of heavy steel had been waiting for pricing changes since Mr. Murray began pounding the war drums. Most common form of loss insurance was the escalator clause allowing for a reasonable increase in material costs. These were beginning to appear with considerable frequency as early as April.

But even with new costs established, fabricators' problems are far from solved. It's still tough to get structurals and enough plate. Use of foreign steel, when the customer wanted speed, and out-of-area buying have helped. Conversion has been somewhat less a boon but has been used where speed was essential.

See Better Days—Fabricators now are beginning to edge toward normal buying patterns, the first indication that they feel supply will improve. Some believe structurals will be more available in the first quarter but nearly all agree plates will remain critical well into the second. This follows the 1952 pattern.

Fabricators feel they lost ground during the two abortive steel mill shutdowns earlier this year. These, they were told, fouled up rolling schedules. One reported mills were carrying, prior to the strike, as much as a 45-day backlog of steel he had ordered. During the strike he lost 30 days of inventory.

Shipments Bolstered—Present hand-to-mouth deliveries must be augmented by warehouse buying, trading and help from customers. CMP ratings have helped, though another fabricator reported diffi-

What It Costs When A Purchasing Agent Can't Get Mill Steel

In an effort to spell out the difference in dollars and cents, THE IRON AGE last week queried (1) an integrated steel mill, (2) a warehouse which is part of a large steel warehousing chain, (3) a supplier of foreign steel, and (4) a mill doing conversion work. Here roughly is what would have happened to your purchasing if you had ordered at Chicago last week a 40-ft 7-in. standard I beam in a weight of 15.3 lb per ft.

AT THE MILL

Cost would be $86 per ton, including the 45¢ product charge. Add freight to your plant and any switching charges.

AT THE WAREHOUSE

A total of $146 per ton. Begin with a $5.95 base charge, add a 20¢ delivery charge, a 45¢ size differential and a 70¢ quantity differential, all per 100 lb. This would bring the steel to your unloading dock.

AT THE IMPORTER

Prices here vary considerably. Mill prices changed recently and broker-importer charges are not uniform. But range seems to be $165 to $185 per ton, delivered. At least three suppliers would have been interested in the deal last week.

AT THE CONVERSION MILL

Your ingots for conversion will cost about $100 a ton delivered to converting mill. This mill will charge you its regular f.o.b. price for finished steel, say a structural shape at $86 per ton. Your apparent cost is now $186. But the mill gives you a credit of $45 (the standard mill price on ingots). This brings the cost down to $141. However, there is a scrap loss in fabrication of about 25 pct of the ingot or $25. Adding this makes your real cost $166 per ton.

Note: Variance between conversion and foreign steel costs is difficult to calculate. In general conversion steel runs once again over the cost of mill steel. Foreign steel in some categories can be obtained more cheaply than conversion steel. At least one plate buyer in the area covered by the sample is buying foreign steel because he has been able to purchase it more cheaply than conversion steel.

how Bill Morton grows plants he never sees

He's got a green thumb, no doubt about it. Bill Morton can make sick plants grow strong and sturdy. And when it comes to *industrial* plants—factories—the Bill Mortons of America, taken together, make *them* grow, too.

The lawnmowers, wheelbarrows, trowels, shovels, sprinklers and other assorted items these fellows buy for home and yard maintenance keep many a manufacturer busy the year around. The plants that produce with presses prosper best because Bill individually and collectively, prefers the lighter, smoother, stronger, less costly items that press methods make possible.

If you make metal products, you can't afford to overlook this established public preference, the food that makes factories grow. Let a Clearing engineer show you how to use it to lower your costs and expand your market.

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HAMILTON DIVISION, HAMILTON, OHIO

CLEARING PRESSES

THE WAY TO EFFICIENT MASS PRODUCTION

culty on steel delivery for an Atomic Energy Commission project. But there are signs of better times, one fabricator reporting last week's volume of incoming steel approaching pre-strike levels.

With many far behind schedule or forced to limit bids because of poor steel availability, there could be little optimism. What does seem important is that these steel users believe they can return to normal buying soon.

They no longer speak commonly of conversion. Some eye foreign steel with distrust. And these wary ones seem able to get domestic steel if they scour their vicinity. In some cases, mills are shipping pre-strike tonnage—2½ months behind schedule. New bookings might take 3 to 5 months for delivery for civilian use.

If foreign steel is used, the amount of the order does not commonly exceed 50 tons. Besides the high cost factor, the varying analyses of foreign steel would often require redesign of portions of the structure in which it was used.

If things are bad now—the future seems brighter for structural fabricators.

NPA Exonerates Wooldridge

Wooldridge Mfg. Co., at Sunnyvale, Calif., an earth moving and heavy truck fabricator, has called it a draw with National Production Authority.

In 1951 the firm decided to change from alloy to mild plate steel. It had 452 tons of alloy on hand. The mill didn't want it back; letters to the government were unanswered. So it was sold at cost plus freight to a pipe firm with an NPA rating.

Months later an NPA investigator spot-checked records. He found the buying base price and selling price discrepancy and reported it, overlooking the freight which amounted to about 20 pct. The firm was called before the NPA. Last week NPA announced "no evidence of wilful violations" and cut Wooldridge's next three quarter allotments to recapture tonnage.

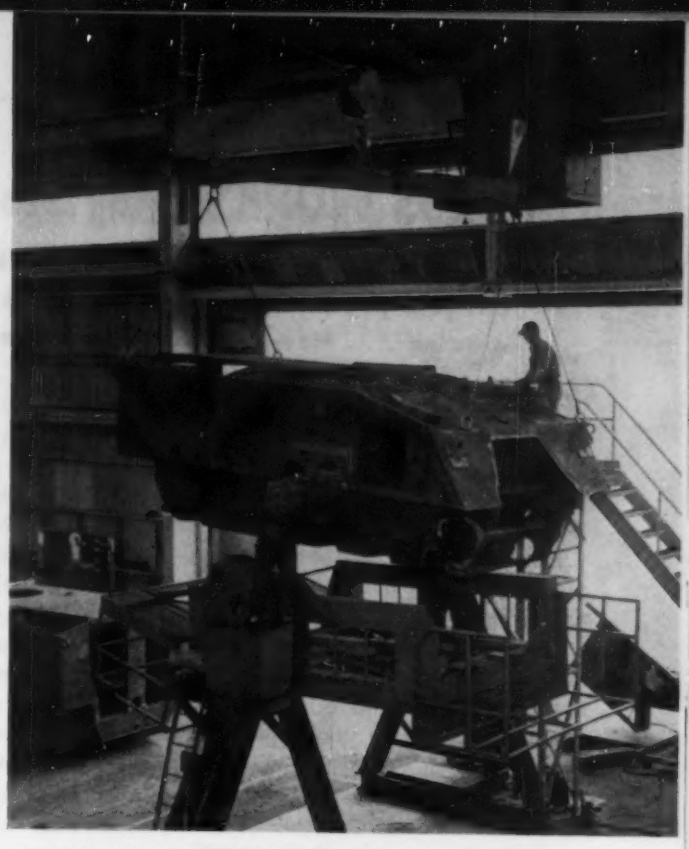
Hull Production—A Tricky Job

The Army's new armored personnel carrier serves the double function of getting troops to the front lines in a hurry while protecting them from small arms fire and shrapnel. Fully tracked, the armored carriers can hit 35 mph on good roads.

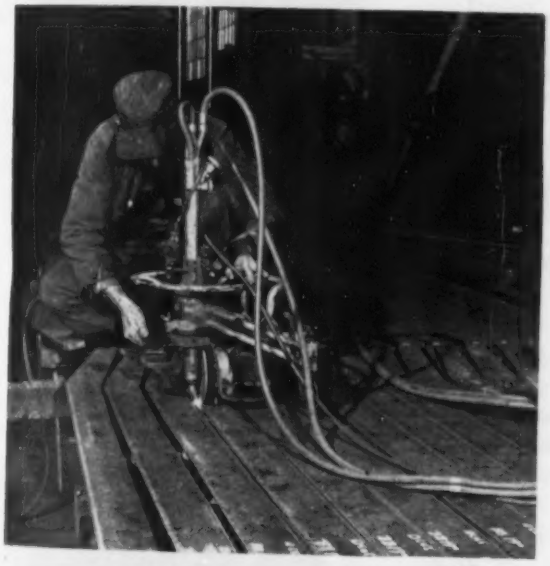
Production of the units is a tandem task. U. S. Steel's Consolidated Western Div., Berkeley, Calif., fabricates the armored hulls and then ships them to the prime contractor, Food Machinery & Chemical Corp., San Jose, for completion.

To handle the tricky hull fabrication job, Consolidated designed special fixtures and jigs and set up an intricate production line. New bay-type buildings have been added to the Berkeley plant and approximately 800 employees, mostly skilled set-up men and welders, were added to the working force.

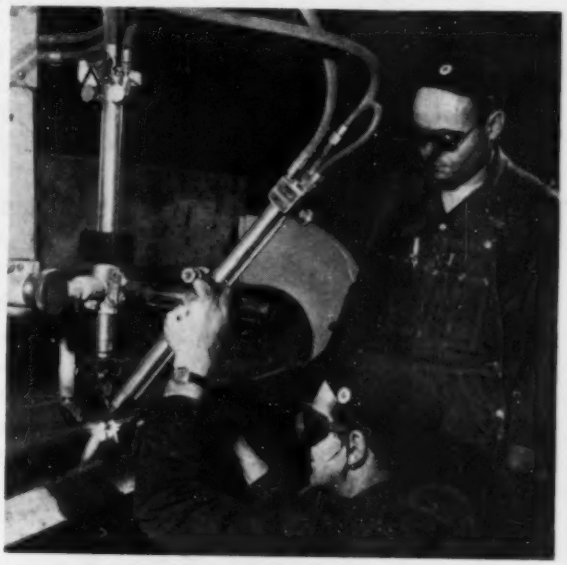
Government requirements for complete hand welding with stainless steel rod made it necessary to use trunnion-type jigs throughout, so that the work could be turned easily for down welding operations. Each hull requires about three-quarters of a ton of stainless steel welding rod.



NEARING COMPLETION: Hull is guided into an "Endo" jig which permits rotation for welding end seams.

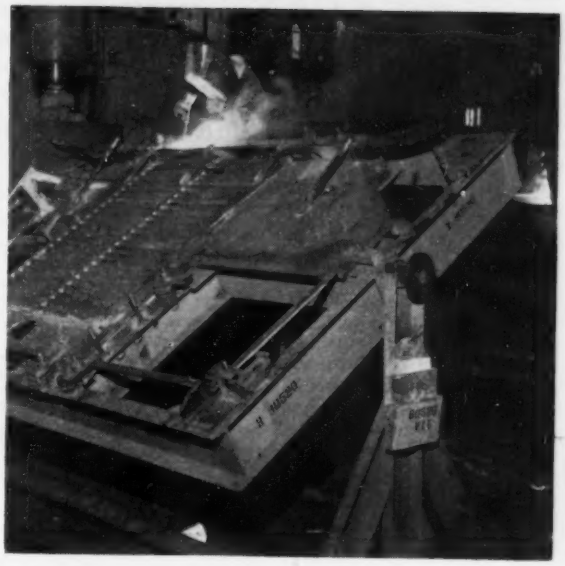


SHAPE - CUTTING: Lead machine of portable shape-cutting unit is used to cut the radius of a section of armor. ←



BEVELING: Top and bottom sides of armor plate sections are beveled at one time with dual-beveling torches. →

FLAME-CUTTING: Magnetic mechanisms trace metal templates of desired shape and guide four oxy-acetylene torches simultaneously in cutting out the hull pieces. ←



JOINING: Welder joins cast grille sections. Trunnion-type jigs permit easy manual rotation of the fixture for down welding operations. →

FAIRLESS WORKS: May Start in '52

Big new eastern mill may produce limited amount of steel this year . . . To hit full stride in mid-'53 . . . Material stock growing . . . Have manpower headache—By *J. B. Delaney.*

The Fairless Works of U. S. Steel Co. may come to life before end of 1952, on a token basis. The mill won't hit full production until mid-1953.

Raw materials are being stockpiled for coke ovens, blast furnaces, and openhearth furnaces.

One battery of 87 coke ovens has been completed, so has one of two blast furnaces. The nine 275-ton openhearths are in various stages of completion. Some rolling mills are about ready for test runs.

A handful of production workers already are on the payroll. Maintenance workers number about 150.

Looks Deceive—But no one is making definite predictions on actual starting dates of production units. At first glance the plant looks almost as it will when it is turning out steel. But there is still much work to be done on the complex "innards" of the mill.

The 3800-acre site in a bend of the Delaware River opposite Trenton, N. J., is still swarming with construction workers—10,000 of them.

Construction work is behind schedule due to strikes and acts of God. The steel strike alone represented a setback of 53 days—one for each day of the strike. Foul weather also took its toll; during the period from last Nov. 4 to Mar. 4 it rained every 4 days on an average. There were six jurisdictional strikes, a 10-day strike of AFL Operating Engineers, and a week-long strike of laborers.

Supplies Stored—The raw materials stockpile is growing steadily. A minimum steel scrap supply of 30 days is on the ground. Coal inventory has risen to 120,000 tons—about a 1½-month supply. The ore storage yard holds 100,000 tons of Mesabi ore. Another 20,000 tons of Brazilian and Cuban ore is stocked elsewhere on the plant site.

Excavation of the slip where ocean-going ore boats will be moored and unloaded is nearing completion. This is expected to be ready near the end of 1952. Initial depth will be 25 feet—not enough to accommodate the 40,000-ton giant ore carriers that one day will be transporting ore to the plant from Venezuela. Authorization for deepening the Delaware River channel to 40 feet is being sought.

21,000 Job Seekers—Meanwhile the company is coming to grips with another problem—manpower. It has 21,000 applications for the 6000 jobs it has to offer. But this is misleading. For instance, only three bricklayers have applied for the 80-90 jobs of this kind that must be filled. And 150 applicants want the one job of personnel director.

Capacities

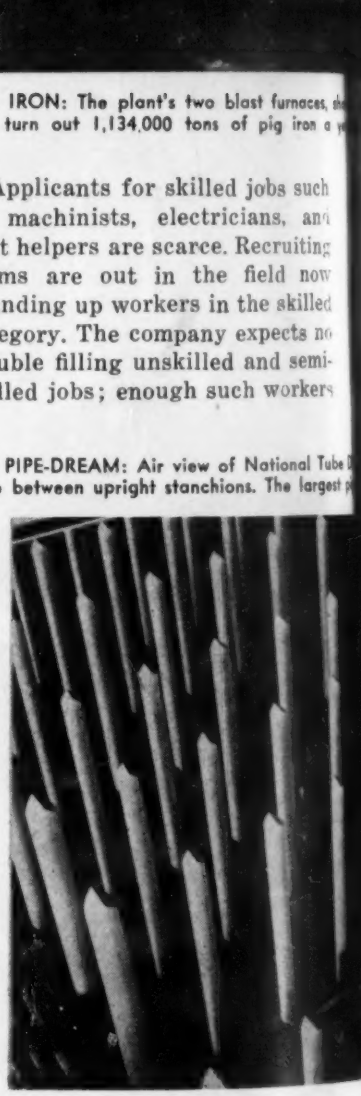
Ingots—1,800,000 tons.
Cold rolled sheets — 289,000 tons.
Hot rolled sheets — 235,000 tons.
Standard pipe—281,000 tons.
Bar products—285,000 tons.
Tin mill products—170,000 tons.
Coke—916,000 tons.
Iron—1,200,000 tons.

Steel products will include: carbon high strength and alloy ingots, blooms, billets, slabs, bars, including bar sized shapes, rounds, squares, concrete reinforcing bars, wire rods, light plates, standard steel pipe, hot and cold rolled sheets and strip, vitrenamel sheets, black plate, electrolytic and hot dipped tin plate.

PIG IRON: The plant's two blast furnaces, ... will turn out 1,134,000 tons of pig iron a ...

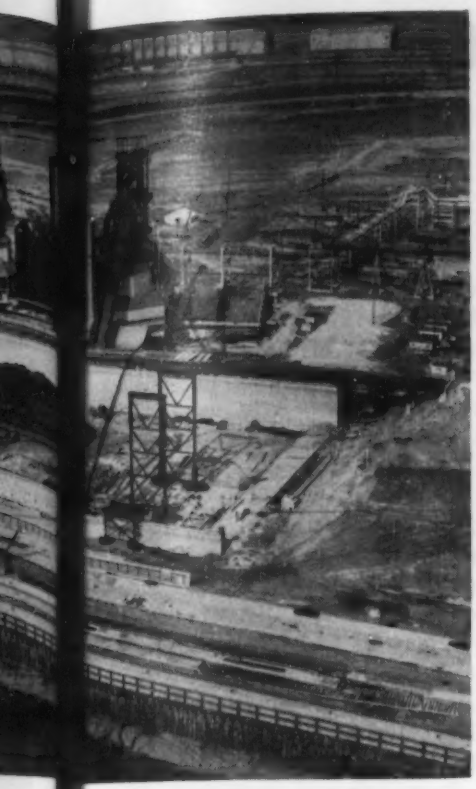
Applicants for skilled jobs such as machinists, electricians, and first helpers are scarce. Recruiting teams are out in the field now rounding up workers in the skilled category. The company expects no trouble filling unskilled and semi-skilled jobs; enough such workers

NO PIPE-DREAM: Air view of National Tube ... pipe between upright stanchions. The largest ...



Completion Dates

NEAR CLOSE OF 1952	FIRST HALF OF 1953	MID-1953
Openhearth furnaces (partial)	Sheet finishing facilities, including 4-stand cold reduction mill.	30-in. billet mill
Blast furnaces	Sheet temper mill	21-in. billet mill
Coke ovens	Shearing lines	10-in. bar mill
Tinplate finishing on limited basis, including 5-stand 48-in. cold reduction mill, continuous annealing line, temper mill, shearing line, electrolytic line, hot dip line	Batch annealing 45-in. universal slabbing mill 80-in. hot strip mill	

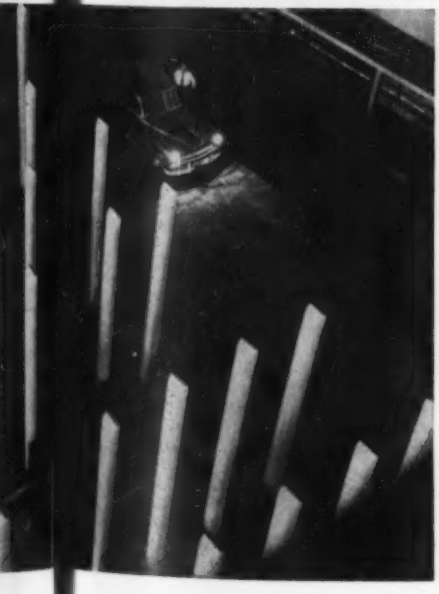


re at each end of the row of heating stoves, e will be piled in the foreground area.

are believed available within a 20-mile radius of the plant. Seventy-five pct of all workers will probably be recruited within a 100-mile radius of the mill.

Of the 21,000 applicants, 4800 are unskilled workers, 7000 semi-skilled, 2000 skilled, 2600 male clerical, 1000 female clerical, 272 graduates of technical colleges, 1300 graduates of non-technical colleges, 550 plant protection workers, 130 nurses, 350 construction engineering workers, and 500 miscellaneous.

the Fairless Works shows spaces for storing rehouse, it has 30,000-ton capacity.



Union Applies — The United Steelworkers of America (CIO) is getting set to take over as collective bargaining agent for Fairless workers. Philadelphia district headquarters of the union has already applied to the National Labor Relations Board for certification as representative of the workers. Elections will be held when the plant gets into production.

One of the problems faced by U. S. Steel as an immediate aftermath of its announcement of plans to build the Fairless Works was to allay the misgivings of area residents who had all sorts of fantastic notions about steel plants and the men who operate them.

Consequently, company executives have devoted considerable time to speechmaking and group discussion outlining what they plan to do and what the plant will mean to the economy of a district that had been largely agricultural.

The company feels it has made plenty of progress in this direction. The plant site has been and continues to be a major tourist attraction. Hardly a day passes that one group or another doesn't show up to have a look at the plant —school teachers, bankers, engineers, service clubs, students, and governmental bodies. What they see and hear makes a good impression.

Company officials have emphasized their desire to be good neighbors. They have pointed out features of the plant designed to control smoke emission and water pollution. The openhearths, for example, have been equipped with electrostatic precipitators that will remove dust and other matter before it leaves the stacks. Water drawn from the Delaware for mill purposes will be cleaner when it leaves the plant than when it was taken in.

Major Production Units

Two 87-oven chemical-recovery coke batteries with combined annual capacity of 916,000 net tons of coke. The plant will include facilities for recovery of ammonium sulphate, crude tar, naphthalene, phenol and crude light oil.

Two blast furnaces with annual capacity of 1,200,000 tons of pig iron.

Nine 275-ton open hearth furnaces with annual ingot capacity of 1,800,000 tons.

One 45-in. slabbing-blooming mill.

One 80-in. hot strip mill.

One 5-stand cold reduction mill for reducing strip for tinplating.

One 4-stand tandem cold reduction mill for production of cold reduced sheets.

One 2-stand tandem tin temper mill.

One single-stand 4-high sheet temper mill.

One 40-in. 2-high reversing blooming mill.

One 30-in. 6-stand continuous billet mill.

One 21-in. 4-stand continuous billet mill.

One 10-in. continuous bar mill.

One skelp mill.

Two continuous butt weld mills with annual capacity of 281,000 tons of ½-in. to 4-in. pipe.

Pipe galvanizing facilities.

One continuous annealing line.

One electrolytic tinning line.

One hot-dip tinning line.

Eleven 4-stack batch annealing furnaces with 27 bases.

AMERICAN CHEMICAL PAINT COMPANY
AMBLER CHEMICALS ACP PROCESSES PENNA.

Technical Service Data Sheet
Subject: PROTECTING ALUMINUM WITH ALODINE®

"ALODINE" No. 100

"Alodine" No. 100 forms an amorphous phosphate surface on aluminum which is thin, tough, durable, non-metallic, continuous with and a part of the basis metal. The "Alodine" film anchors paint, prolongs paint life, and protects aluminum exposed unpainted to the atmosphere.

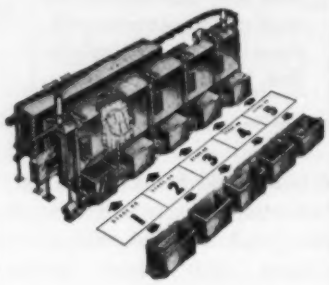
With the "Alodine" No. 100 bath at its normal temperature of 120° F., coating time by immersion approximates 1½ minutes—and by spraying, 15 to 20 seconds. Coating times and bath temperatures can be varied to suit operating conditions.

"ALODINE" No. 600

"Alodine" No. 600 forms corrosion-resistant coatings that provide excellent protection for unpainted aluminum and also make an effective paint-base. This grade is recommended for use in place of "Alodine" No. 100 on aluminum parts that are to remain unpainted or to be only partly painted; and on *all* aluminum castings and forgings whether or not these are given a paint finish.

"ALODINE" FLOW SHEETS

MULTI-STAGE POWER WASHER FOR SPRAY ALODIZING



IMMERSION TANKS FOR DIP ALODIZING

PROCESS SEQUENCE

1. Clean 2. Rinse 3. "Alodine" 4. Rinse 5. Final Rinse

NOTE: Equipment can be of mild steel throughout, except the "Alodine" stage which must be of acid-resistant material.

"Alodine" No. 600 is applied at room temperature (70° to 120° F.). Recommended coating times are 3 to 5 minutes for an immersion process and 1 to 1½ minutes for a spray process.

COATING DATA	"ALODINE" NO. 100	"ALODINE" NO. 600
COMPOSITION	Amorphous phosphate.	Amorphous mixture of metal oxides and chromates.
COLOR	Depending on alloy treated, color range is from an iridescent blue-green to a dark slate gray.	Depending on time of treatment, color range is from golden iridescent to light brown.
THICKNESS	From 0.01 to 0.08 mil. No appreciable dimensional changes occur when aluminum is Alodized.	From 0.005 to 0.01 mil. No appreciable dimensional changes occur when aluminum is Alodized.
WEIGHT	50 to 300 mgs. per square foot. Optimum: 100 to 200 mgs. per square foot.	35 to 50 mgs. per square foot.
SOLUBILITY	Insoluble in water, alcohol, solvents, etc. Insoluble in most dilute acids and alkalis. However, strong acids and alkalis which attack aluminum may penetrate the "Alodine" film and react with the underlying metal. Slightly soluble in concentrated nitric acid. Soluble in molten sodium nitrate, etc.	Insoluble in alcohol, water, solvents, etc. Soluble in strong alkalis and acids.
ELECTRICAL PROPERTIES	High dielectrical resistance.	This coating is electrically conductive. Aluminum coated with "Alodine" No. 600 can be shielded-arc welded or spot welded.
HEAT STABILITY	Unimpaired at temperatures that melt aluminum.	Unimpaired at temperatures that melt aluminum
FLEXIBILITY	Integral with and as flexible as the aluminum itself. Can withstand moderate draws.	Integral with and as flexible as the aluminum itself. Can withstand moderate draws.
ABRASION RESISTANCE	Approximately 90% of that provided by chromic acid anodized aluminum.	Approximately 90% of that provided by chromic acid anodized aluminum.
CORROSION RESISTANCE	Painted—superior to chromic acid anodizing. Unpainted—comparable with chromic acid anodizing. Meets MIL-C-5541 and other Government Finish Specifications.	Exceeds requirements of MIL-C-5541 and even AN-QQ-A-696a (anodic films)
PAINT-BONDING	Excellent. Equal to or superior to anodizing. Meets MIL-C-5541 and other Government Finish Specifications.	Excellent. Meets MIL-C-5541 and other Government Finish Specifications.
TOXICITY	Non-toxic.	Non-toxic.
BIMETALLIC CORROSION RESISTANCE	Shows good resistance against bimetallic or galvanic corrosion.	Shows good resistance against bimetallic or galvanic corrosion.

CHEMICALS ACP PROCESSES **WRITE FOR FURTHER INFORMATION ON "ALODINE" AND ON YOUR OWN ALUMINUM PROTECTION PROBLEMS.** CHEMICALS ACP PROCESSES

ORE: Rush to Beat

Lake ore fleet going at fever pitch . . . Shippers still shy 20 million tons—By R. D. Raddant.

Resounding whistle blasts of a Great Lakes salute were heard in the Detroit River last week. Passing veterans of the Lakes fleet let go traditional blasts, three long and two short, as a new 647-ft giant threaded its way down the channel and into Lake Erie.

Newcomer was the *Cason J. Calloway*, on a trial run before taking its place as Vessel No. 64 in the fleet of U. S. Steel's Pittsburgh Steamship Div. The big ore carrier was to be put through its tests before being turned over to its new owners by the builders, Great Lakes Engineering Works, River Rouge, Mich.

Responding to commands from the pilot house, the *Calloway* made its speed runs, test turns, emergency stops, anchor trials and other performance tests required before title transfer. Three days later it was on its maiden run.

In A Hurry—Haste was necessary. It was only through the *Calloway* and ships like her that the battle of the Lakes could be won. A peaceful ship by intent, the *Calloway* found itself in the front line of one of industry's most crucial struggles.

The steel strike took a huge 8-weeks' bite out of the 8 months shipping season. Close to 25 mil-

MAIDEN VOYAGE: *Cason J. Calloway* is pitching in to make up strike-lost ore long tons of ore before the freeze.

Winter Freeze

lion tons of ore appeared to be irrevocably lost. Unless this loss of shipping could be made up in part, the entire steel industry faced a possible drastic ore shortage before spring.

At the strike's end, the situation was critical. It was doubtful if enough of the 8-months' shipping season remained for the fleet to recover sufficient ore to last through the winter until navigation opens in 1953.

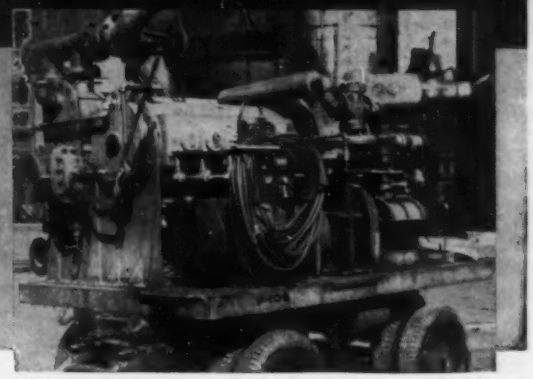
Shipments Down—But with the help of new ships like the *Calloway*, the battle could be won. At Sept. 15, ore shipping was still more than 20 million tons behind the rate of 1951. (In recording shipments of ore, all measurements are measured in terms of gross tons.) By that date, in 1951, 64,777,092 tons had been shipped as against 44,666,103 tons this year. Total for 1951 was 89,092,012 tons.

It was never hoped that the deficit could be recovered entirely. The simultaneous loss of 19 million tons of steel production made it unnecessary to pick up all lost tonnages. However, expanding melting facilities as well as the season's shortness aggravated the situation.

When turned loose at the strike's end, the Lakes fleet responded almost immediately with record tonnages. This has been largely due to the addition of four new carriers since the end of the

Calloway, Pittsburgh Steamship Div.'s latest addition, ...ments. It's estimated she'll carry 500,000

GUARD AGAINST EXPLOSION with R-C INERT GAS GENERATORS



Portable R-C Inert Gas Generator used for purging operations and stand-by protection in large gas-producing plant. Capacity 15,000 cfh.

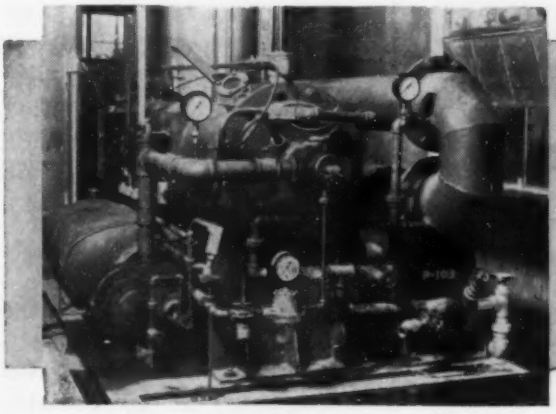
If your operations involve materials or processes which might cause an explosion-produced fire, you can reduce the risk with R-C Inert Gas Generators. In many instances, the relatively small cost is absorbed by savings in insurance costs.

These mobile or stationary units instantly produce a continuing flow of inert gas, for use in purging gas or liquid lines, blanketing dangerous areas and for many other industrial uses involving the handling or storage of explosive materials.

R-C Inert Gas Generators are compact, simple and inexpensive to operate, with either oil or gas as fuel. They are available in capacities from 1,000 cfh to 50,000 cfh, with characteristics to match specific requirements.

Where even a relatively low explosion hazard exists, one incident might produce a disastrous fire. Ask for details on how such dangers may be averted with R-C Inert Gas Generators.

ROOTS-CONNERSVILLE BLOWER CORPORATION
526 Ohio Avenue, Connersville, Indiana



Installation of three R-C Inert Gas Generators similar to this one helped one large plant save $6,000 per month insurance premiums, as well as substantially reduce danger of production losses caused by explosion or fires. Capacity of each unit, 6,000 cfh.

ROOTS-CONNERSVILLE BLOWER
A DIVISION OF DRESSER INDUSTRIES, INC.

strike. The *Calloway* made it five. Together their total capacity is nearly 100,000 tons.

Broken Records—Result of this new capacity was a series of record breaking performances. August tonnage reached 14,367,627 tons, the first month in history to pass the 14 million mark. August shipments were 1,100,000 tons over the same month of 1951.

An all-time weekly record was reached Sept. 1 when loadings totaled 3,336,033 tons. This record lasted only 1 week when the next 7 days saw 3,384,481 tons loaded. With the *Calloway* and other new ships joining the fleet in September, these record figures should be surpassed before the season closes.

Considering the loss of steelmaking compared with the recovery of Lakes ore shipments, the deficit should reach the stage of a "paper shortage" if the rate of shipping continues to show gains.

New Ships—Major and possibly only significant factor in recovering losses is the addition of new bottoms to the Lakes fleet. Nine ore carriers have been added to the fleet this year, five since the strike. Four more are under construction. Three Canadian ships have also joined the fleet this year, although not entirely for ore shipments. Speed of the new ships is of vital importance. They make the round trip in 5 days compared with 7 required by the older ones.

Many experts tend to discount accelerated rail shipments and the high water level, reputed to add extra draft to the fleet, as having little bearing on the total shipping.

Only 34 ships in the entire fleet draw enough to benefit from added draft. Others are limited by their own size, not channel depth. Furthermore, a St. Mary's River shoal is the danger spot regardless of the depth of the lakes. Here the maximum draft this year is 25 ft 6 in. compared with 25 ft 4 in. last year, a gain of 2 in.

Bigger Loads—The Coast Guard has recognized the high water and the emergency by extending the summer load limits from Sept. 15 to Sept. 30. Ordinarily the maximum draft would be cut 6 in, Sept. 15 because of seasonal navigation hazards. The extension gives ore carriers an added 500 tons of capacity for these 15 days.

Rail shipments are limited in spite of efforts to redouble them and total rail tonnages are not large. In 1951, the largest rail shipment year in history, 8 million tons were shipped compared with a normal rail activity of 2½ million tons. Rail shipments this year have been nearly normal until recently and added effort is expected to bring the year's total to perhaps 5 million tons. Cost is roughly 2½ times as great as Lakes shipping.

The weather is an unpredictable factor. It is true that an unusually warm autumn would lengthen the season somewhat. Water in the lower lakes may be warmed by an unusually hot summer, but Lake Superior weather has been normal. Moreover, when freezing weather hits the ore country, difficulty in handling the ore is nearly as much a limiting factor.

Power

ATOMS: Can Industry Build Reactors?

Atomic Energy Commission studies feasibility of letting private firms build power-producing reactors . . . Run joint survey . . . Companies to pay most of the survey expenses.

Pioneer Service and Engineering Co., of Chicago, and Foster Wheeler Corp., of New York, are teaming to conduct, under Atomic Energy Commission contract, a 12-month survey of the feasibility of private industry design, construction, and operation of power-producing reactors.

The two firms have given AEC a proposal for a study similar to those made by four pairs of companies in 1951. Other firms or groups of firms are expected to furnish the agency with detailed proposals at a later date.

Goals—AEC says any agreements made in this second round of projected studies will have the following chief goals:

1. Determination of the probable success of private industry design, construction, and operation of a reactor.

2. Examination of economic and technical aspects of building a reactor.

3. Measure of the research and development work needed before a reactor project can be undertaken.

4. Recommendation to AEC of the specific role of industry in carrying out a reactor project.

Who Pays—All expenses for initial phases of these studies, except for costs of time and effort of AEC and its contractors, will be borne by the companies. AEC will decide on distribution of reports and of information on inventions and discoveries made during the work.

Teams of companies which conducted the 1951 surveys for AEC are:

Monsanto Chemical Co. and Union Electric Co. of Missouri, both of St. Louis; Detroit Edison Co., Detroit; Dow Chemical Co., Midland, Mich.; Commonwealth Edison Co. and Public Service Co. of Northern Illinois, both of Chicago; and Pacific Gas and Electric Co. and Bechtel Corp., both of San Francisco.

NPA: Allocations Slimmed Down

First quarter steel allotments will satisfy military and AEC . . . Civilians to get 75 pct of fourth quarter steel, 100 pct of aluminum and copper allocations—By *A. K. Rannells.*

Military and atomic energy steel requirements will be met in full for first quarter 1953, but unless the picture clears up most nondefense industries will have to be satisfied with about 75 pct of what they were allocated for fourth quarter 1952.

In announcing first quarter allocations this week, National Production Authority also said nondefense industries would receive about the same copper and aluminum allotments as for the fourth quarter.

Blame Strike—Reason for the low steel allotments is given by NPA as being a direct result of the steel strike—even though the agency estimates that first quarter 1953 production will set an alltime high of 22,157,000 tons.

But the agency also expects a big carryover of undelivered fourth quarter CMP steel orders in addition to the 17,669,000 tons of steel demand represented in the new first quarter allotments. It expects to bring the carryover back to normal by Apr. 1.

This picture admittedly will vary among different steel products. Carbon sheet and strip are expected to catch up with outstanding allotments long before bars, plate, and other forms and shapes.

Copper and aluminum allotments generally will be allocated at fourth-quarter levels. This means that non-defense manufacturers will get allotments of copper equal to 50 pct of pre-Korean levels and 55 pct of aluminum.

Will Stock Surplus—First quarter aluminum supplies are estimated at 348,000 tons, taking into consideration possible shortages as a result of power shortages. Anything above this amount will be stockpiled.

With the exception of the military establishments, including atomic energy, most claimant agencies have received cutbacks although in varying degrees.

NPA's share was set at about 9,700,000 tons, as compared with the fourth quarter figure of 12,500,000 tons. This includes provision for self-certified amounts under Dir. 18 and also MRO.

NPA's Motor Vehicle Div. will get 2,060,000 tons of steel, approximately 75 pct of third quarter allotments, while 103,000 tons is to be provided the Iron and Steel Div.—about 65 pct of third quarter allotments.

Other major NPA divisions and their allotments include:

Consumer durables, 468,134 tons or 75 pct; mining machinery, 91,117 tons or 80 pct; metalworking equipment, 346,595 tons or 77 pct; and construction machinery, 353,276 tons or 75 pct.

Slightly more than 100,000 tons is to be set aside for NPA's general reserve, a small increase, while the setaside for hardship cases will be 55,000 tons as compared with 11,000 tons for fourth quarter.

Warehouse Ceiling Method Set

Warehouse resellers of iron and steel products may continue to use authorized mill price increases in figuring ceilings until they receive invoices for mill shipments made on or after July 26.

Office of Price Stabilization is permitting this action to forestall creation of a dual price structure which could result if resellers were required to determine ceilings on basis of invoices made out before higher steel prices became effective. At the time of the OPS action, there was evidence of continuing delay of steel shipments to warehouses.

Authority to use mill prices is covered by Amend. 6 to Ceiling Price Reg. 98.

"Haskins has established an enviable record here—been with us 26 years. Gad but I'm tired of seeing him."

Must File Renegotiation Report

Renegotiation Board is reminding defense contractors whose business year ended June 30 that they must file the first part of their renegotiation report, RB Form 1, with the board by Oct. 1.

The more detailed second part, Form 1B, may be filed with the first section and should be filed not later than Nov. 30.

Contractors and subcontractors having total incomes of not more than $250,000 from renegotiable sales will not be renegotiated, but must file answers to a portion of Form 1. Floor figure for brokers, agents, and dealers is $25,000.

Reporting forms have gone out to all contractors and subcontractors on record at the board, but failure to get a form does not relieve a businessman of filing responbility. All six regional boards and the national board have supplies of forms.

Prices to Show Head Office Costs

Heavy central office expenses may turn out to be less burdensome to companies with separate plants because of a new Office of Price Stabilization action.

Manufacturers applying for higher ceiling prices to compensate for losses created by operation of multiple plants or a single plant in a group now may include central office expenses in calculating losses. Some relief thus is available to manufacturers who concentrate some or all of their

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UNITED STATES STEEL

administrative activities in a central office.

Amend. 5 to General Overriding Reg. 10, effective Sept. 22, permits inclusion of outlays for the central office, which formerly could not be included.

First Quarter Cryolite Boost

Most users will get a first quarter boost in cryolite supplies and will be permitted to hike their inventory ceilings.

Under an amendment to M-99, all consumers except producers of primary aluminum and of insecticide grade cryolite will be permitted to use up to 125 pct of their actual first quarter 1952 consumption beginning Oct. 1.

At the same time, they will be permitted to increase their inventories from a 30 to a 40 day supply. They may also hold inventory up to 50 pct of their quarterly use or 1500 lb, whichever is greater—but not in excess of twice the authorized quarterly use.

Industry Controls This Week

Below Ceiling—GOR 36 permits individuals and firms selling materials or services below ceiling levels to dispense with OPS reporting requirements.

Brass, Copper—Amend. 1, CPR 68 and Amend. 1, CPR 110 authorizes brass mill and copper wire mill producers to postpone recalculation of ceiling price adjustments covering cost of foreign copper until Dec. 1, 1952.

Electrodes—Revoc., Dir. 1, M-66 removes price controls from artificial graphite and carbon electrodes.

Iron, Steel—Amend. 6, CPR 98 permits warehouse resellers of iron and steel products to continue using authorized mill price increases in figuring ceilings until they receive invoices for mill shipments made on or after July 26. Revoc., Dir. 2, M-6A eliminates directive ordering steel producers to deliver increased percentages of barbed wire, reinforcing bars and other items to flood areas.

Office Cost—Amend. 5, GOR 10 allows concerns with multiple plants to include central office expenses in calculating losses when applying for higher ceiling prices.

Contracts Reported Last Week

Including description, quantity, dollar values, contractor and address. Italics indicate small business representatives.

Replenishment of motor vehicle parts, 7400 ea, $28,347, Columbian Street Tank Co., Kansas City.

Replenishment of motor vehicle parts, 2000 ea, $98,300, Detroit Steel Product Co., Detroit.

Replenishment of tank and combat vehicle parts, 325 ea, $98,260, Jack & Heintz, Inc., Cleveland, *P. J. Barnsfeld.*

Replenishment of tank and combat vehivle parts, 200 ea, $37,790, GMC, Indianapolis, *H. S. Bowden.*

Replenishment of motor vehicle parts, 20000 ea, $35,280, The Electro Auto-Lite Co., Toledo.

Replenishment of motor vehicle parts, 5900 ea, $30,509, GMC, Truck & Coach Div., Pontiac, Mich., *J. P. McManus.*

Replenishment of motor vehicle parts, 31400 ea, $43,168, A. P. Parts Corp., Toledo.

Winch, assy, 100 ea, $31,552, Gar Wood Industries, Inc., Wayne, Mich.

Volt-Ohmmeter, 500 ea, $29,485, Radio Specialties Co., Detroit.

Replenishment of motor vehicle parts, 20945 ea, $50,848, Dana Corp., Toledo.

Replenishment of motor vehicle parts, 270 ea, $29,025, Mutual Truck Parts Co., Inc., Chicago.

Replenishment of motor vehicle parts, 4000 ea, $26,736, Wire Assemblies Corp., Detroit.

Replenishment of hardware, 20150 ea, $27,781, Dismuke Tire & Rubber Co., Clarksdale, Miss.

Replenishment of motor vehicle parts, 22000 ea, $43,714, Remsel Industries, Inc., Chicago.

Replenishment of tank and combat vehicle parts, 575 ea, $43,317, Novi Equipt. Co., Novi, Mich.

Replenishment of tank and combat vehicle parts, 9800, $264,600, Cogmatic Co., Milwaukee.

Replenishment of tools, 6350 ea, $180,340, Gray Co., Inc., Minneapolis.

Fuze, dummy, M73, 1040000, $972,920, Deere & Co., Moline, Ill.

Cartridge case, 6000000, $219,480, Borg Warner Corp., Bellwood, Ill.

Shell, HE, 105mm, M1, 285000, $2,277,150, Altorfer Bros. Co., East Peoria, Ill.

Projectile 20 MM, TP M99, 1447500, $302,527, Automatic Pencil Sharpener Co., Rockford, Ill.

Case cartridge, brass, 5635980, $1,093,436, Stoner Mfg. Corp., Aurora, Ill.

Tube, howitzer, 105MM, 100, $29,989, Chain Belt Co., Milwaukee.

Solenoids, 5790 ea, $38,069, Federal Electric Products Co., Hartfird, Conn.

Fuze, time M84, 284000, $514,040, Indiana Die Casting, Inc., Elwood, Ind.

Primer, percussion, M54, metal parts for, $63,726, Tubing Seal Cap, Inc., San Gabriel, Calif.

Government Inviting Bids

Latest proposed Federal procurements, listed by item, quantity, invitation No. or proposal and opening date. (Invitations for Bid numbers are followed by "B," requests for proposals or quotations by "Q.")

Springfield Armory, Springfield, Mass.

End mills, 1188 ea, 53-56B, Sept. 29.
Cutters, 445, 53-56B, Sept. 29.
End mills sets, 241 set, 53-56B, Sept. 29.
End mills, 558 ea, 53-56B, Sept. 29.

District Corps of Engineers, San Francisco, Calif.

Box, outlet, 2000 ea, 04-203-53-28B, Sept. 29.
Box, outlet, 1400, 04-203-53-28B, Sept. 29.
Brace, cross arm, stl, galv, 2500 pr, 04-203-53-28B, Sept. 29.
Condulet, WRBM, galvanized, 2500, pct, 04-203-53-28B, Sept. 29.
Fixture, lighting bracket, 2500 ea, 04-203-53-28B, Sept. 29.
Switch, toggle, 3100 ea, 04-203-53-28B, Sept, 29.
Rod, cleaning, jointed, cal. .30, 130000 ea, 53-57B, Oct. 9.

Watervliet Arsenal, Watervliet, New York.

Steel, hood assembly, assembled, 40 mm gun, 700 ea, 33351J, Oct. 7.

Ordnance Ammunition Center, Joliet, Ill.

Tube, burster, 190000 ea, ORD 11-173-53-8B, Oct. 10.
Container, ammo, metal, 546200 ea, ORD 11-173-53B, Oct. 9.

General Stores Supply Office, Philadelphia.

Cans, steel, ash and garbags, 6180 ea, 1 1149B, Oct. 2.
Closers, door, hydraulic type, 6350 ea, 1 1150B, Oct. 1.
Flush valves polished brass, 3100 ea, 1 1152B, Oct. 1.
Mop wringer with water containers, 1700 ea, 2 1157B, Oct. 2.

Navy Purchasing Office, Washington, D. C.

Pump, fire and flushing, 100, 6156-S, Oct. 7.
Onboard repair parts, 60 sets, 6156-S, Oct. 7.
Plug, dummy nose, 5000, 6706-O-B, Oct. 14.
Steel cavity charge container, 35000, 6711-O-B, Oct. 17.
Picks, railroad, 46500, 6714B, Oct. 2.
Drills, 472178, 6697B, Oct. 3.
Hammers, machinists, 45000, 6715B, Oct. 3.
Torches, blow, gasoline, 5850, 6717B, Oct. 3.
Extractor, screw, 4600, 6718B, Oct. 3.
Screwdrivers, 59900, 447Q, Oct. 3.
Clamps, steer gear, 1800, 451Q, Oct. 13.
Supports, conveyor, gravity, 7000, 6713B, Oct. 3.

Ordnance Tank, Automotive Center, Detroit.

Gage fuel level, 3800, 53-166B, Oct. 9.
Wheel bogie assy, 24999, 53-40B, Oct. 20.
Roller support track, 500, 53-40B, Oct. 20.

Small Firm Gets PGM Contract

MacDonnell Boat Works, St. Marys, Ga., a small business firm, will build five Navy vessels in the motor patrol gunboat (PGM) class.

Unit price for each of the wooden-hulled vessels is set at $171,222. Bureau of Ships says 70 firms received invitations to bid, and 33 submitted proposals.

PGM is a 110-ft craft, diesel powered, carrying guns.

—Construction—

Steel Inquiries and Awards

Fabricated steel awards this week include the following:

420 **Tons,** Tolland and Willington, Conn., grading, drainage and three bridges. Brunalli Construction Co., Inc., Southington, Conn., low bidder.

Reinforcing Bar Awards this week include the following:

900 **Tons,** Great Lakes, Ill., electronics supply office for Great Lakes Naval Station, to Sumner S. Sollitt.

206 **Tons,** Tolland and Willington, Conn., grading, drainage and three bridges. Brunalli Construction Co., Inc., Southington, Conn., low bidder.

140 **Tons,** Park Forest, Ill., Park Forest high school to Chell & Anderson.

Reinforcing Bar Inquiries this week include the following:

104 **Tons,** Franklin, N. H., 852 miles of road mix pavement and reinforced concrete overpass, Daniel Webster Highway (U. S. Route 3). R. H. Whitaker, Concord, construction engineer, completion date July 1, 1954.

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125	275	450	1000	1550
138	288	500	1050	1600
150	300	550	1100	1650
163	313	600	1150	1700
175	325	650	1200	1750
188	338	700	1250	1800
200	350	750	1300	1850
213	363	800	1350	1900
225	375	850	1400	1950
238	388	900	1450	2000
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Industrial Briefs

Expansion Program—EATON MFG. CO. announced an additional expansion program at its Pump Div., Marshall, Mich., to meet increased military and power steering requirements for Eaton Rotor Pump.

Shipyard Converted — BABCOCK & WILCOX CO. has purchased facilities of a former shipyard from the Brunswick Port Authority and will convert it into a plant to build boilers and related equipment.

Consolidation — Aeroproducts Div., GENERAL MOTORS CORP., Dayton, is being consolidated with the Allison Div., Indianapolis.

Site Acquired — NICHOLSON FILE CO., Providence, has acquired a 12-acre site at Port Hope, Ont., where it will erect a new Canadian branch factory.

Pay Increased—YOUNGSTOWN SHEET & TUBE CO. will distribute $1,800,000 in retroactive pay increases to 20,000 production and maintenance employees in the Youngstown and Chicago districts.

Resources Purchased—THE OLIVER CORP., Chicago, has purchased all resources and facilities used by Carter Industries, Cincinnati, and will integrate the newly acquired line into the business of the Farquhar Div.

Investigation — PENNSYLVANIA COAL & COKE CO has announced plans for making an exhaustive cooperative investigation of all mines and coal seams in the Appalachian region in the hope of finding recoverable quantities of germanium.

Increasing Number — RONSON ART METAL WORKS, INC., Newark, N. J., has equipped a new and additional plant to fulfill an increasing number of sub-contracts for aircraft accessories at N. 13th St. and Park Ave., Newark.

Appointed—Franklin G. Pardee has been appointed president of the LAKE SUPERIOR IRON ORE ASSN., Cleveland.

Offices Opened — MORRIS STEEL & SUPPLY CO. has opened offices in Albuquerque, N. M., specializing in sale of steel, oil well pipe and general supplies for several Los Angeles warehouse and supply firms.

Shipped — A trailer-mounted Ideal Type T-12 Drilling Rig, manufactured by THE NATIONAL SUPPLY CO., has been shipped to New Zealand for use in drilling for natural steam. It was ordered by Dominion Motors Co., Ltd., Auckland, New Zealand.

Contract Awarded—A contract to design and build a new battery of 57 chemical-recovery coke ovens has been awarded to KOPPERS CO., INC., by Algoma Steel Corp., Ltd., Sault Ste. Marie, Ont.

High Capacity Furnace—A Rust continuous reheating furnace to serve U. S. Steel Co.'s new bar and billet mill at Morrisville, Pa., will be the widest and highest capacity furnace of its type ever built, according to RUST FURNACE CO., the designer-constructor.

Steel Report—AMERICAN IRON & STEEL INSTITUTE reports steel production recovered rapidly in August to 8,499,000 net tons, larger than in any other month since March, but much smaller than in any month of the first quarter of 1952.

Construction Started—A new building to double the facilities of the Research and Development Div., MAYTAG CO., is under construction in Newton, Ia.

Appointed Distributor—The Wallace Companies of North Carolina, Bryson City, N. C., have been appointed a distributor of industrial tube fittings and related accessories manufactured by THE PARKER APPLIANCE CO.

Completion — An expansion program that has tripled manufacturing capacity for visual production control equipment, quality control chart holders and wood-and-metal fabrication has been completed by VISI-TROL CORP., Detroit.

Division Formed—NATIONAL LEAD CO. has announced the formation of Pioneer Alloy Products Div. which will take over manufacturing operations of Pioneer Alloy Products Co., Inc., of Cleveland.

Highest Award—David Laine, secretary of THE AMERICAN DIE CASTING INSTITUTE, INC., was given the highest award of the die casting industry for his activities in behalf of the industry during the past year.

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CAN HELP SOLVE YOUR

Power Equation

Balancing the many elements of power requirements—against cost—is a major problem facing all manufacturers today. Failure to solve this complex equation can mean the difference between profit and loss.

But, is there a solution in *Your* Plant?

Look at this partial list of Fairbanks-Morse Diesel advantages and see. F-M in-plant power economically adds to current capacity as load increases . . . eliminates purchasing power at rates based on high peak demand values. Improved power factor. Better current characteristics. Flexibility. Economy. These are a few of the factors that can put your power equation in balance.

If you want the answer to your power equation, write us today outlining your needs. Fairbanks-Morse engineering can give you a proved answer . . . based on over 50 years' experience in industrial and municipal power generation. Fairbanks, Morse & Co., Chicago 5, Ill.

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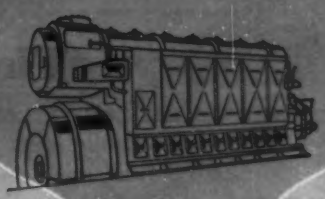

Put Your Power Costs and Performance in Order

1 ***Handle Peak Demand*** . . . reduce peak demand values for lower purchased power cost.

2 ***Raise Power Factor*** . . . "in-plant" generator can eliminate power factor penalties.

3 ***Emergency Power*** . . . insurance against lost production, damage due to line failures.

4 ***Handle Surge Loads*** . . . that may now be affecting current characteristics of entire plant.

5 ***Plant Expansion*** . . . need not be restricted due to lack—or expense—of ample power.

6 ***Useful Heat*** . . . lube oil, water and exhaust heat can cut drying and heating costs.

7 ***Chemical Value*** . . . exhaust gases are high in nitrogen—available for economical fixation of nitrates, ammonia.

8 ***Insurance Advantage*** . . . of diesel over gasoline engine, for example, will soon pay for installation.

9 ***No Weather Worries*** . . . ice, snow, sleet, wind storms can't stop plant operations.

10 ***Handle Increasing Load*** . . . "in-plant" power economically adds to current capacity as load increases.

11 ***Fuel Economy*** . . . use diesel oil, natural gas or sewage gas for added economy.

12 ***Remote Locations*** . . . distance from transmission lines needn't curtail planned plant expansions.

13 ***Compact Power*** . . . Fairbanks-Morse engines give you more power per foot of floor space, more power on present foundation.

14 ***Minimum Attendance*** . . . Fairbanks-Morse "in-plant" generating sets require minimum supervision and maintenance.

15 ***Save Cost*** . . . of running in new line where present transformers and power lines are already loaded.

Did Autoworkers Tip Their Hand?

UAW request to GM for contract changes shows union thinking, stresses . . . Immediate effect not likely . . . Pension increase request seen as most basic—By *R. D. Raddant.*

United Automobile Workers' request last week for revisions in the 5-year escalator contract with General Motors is more than a straw in the wind.

Neither side is obliged to open discussions until expiration in 1955, so it is unlikely that UAW's action will have any immediate effect. But the major points are strong indications of UAW thinking and internal pressures.

As its first demand UAW asked an increase in the annual improvement factor pay raise from 4¢ to 5¢ for the remainder of the contract. Union economists say that the original improvement factor, based on industrywide increased productivity is low for the auto industry because of its highly developed mechanization. This is sure to be a subject for negotiation when the contract expires.

Higher Pensions — Of a more basic nature is the requested increase of current $125 monthly pensions which are not tied to any sliding scale or cost of living adjustments.

There are indications that UAW itself is subjected to considerable pressure from pensioners and potential pensioners. They fear that the rising living costs are wiping out many of the benefits of this major part of the contract. There is already a growing organization of UAW pensioners which will be a future pressure group in welfare lobbying. How strong it will be remains to be seen.

Automotive Production

(U. S. and Canada Combined)

WEEK ENDING	CARS	TRUCKS	TOTAL
Sept. 20, 1952	111,491*	31,003*	114,494*
Sept. 13, 1952	109,272	28,023	135,295
Sept. 23, 1951	104,833	30,182	135,015
Sept. 15, 1951	105,293	30,857	136,150

*Estimated

Source: *Ward's Reports*

Escalator Float — The third point, a hoped-for "float" in the escalator clause may be prompted by expediency and is possibly the only point that may get serious consideration at the moment.

UAW would like to see a major portion of the 26¢ per hr gained under cost of living raises tacked onto the base pay. UAW can probably say with some justification that the cost of living is unlikely to drop back to pre-escalator clause levels and that a raise in base pay would cost the industry nothing, at the moment.

Then, the union could go back to its membership and point to an upward revision in base pay. This would not effect the immediate pay scale, but would give a little more security to members.

Actually, UAW has little reason to expect the granting of any of these requests. GM made no immediate comment on the request and spokesmen indicated that any comment in the near future was unlikely.

Good Reason—There is a reason for this that is as basic as reluctance to increase labor costs. One of the auto industry's principal reasons for entering into the 5-year pact is that it permits long-term calculations of labor costs. It is doubtful if GM or any of the other auto companies would voluntarily engage in discussions that would throw off these calculations.

Furthermore, UAW and the auto companies entered into the long-term contract in good faith with full understanding that economic conditions are subject to change. The very purpose of the escalator clause is to take care of these fluctuations. Breaking a contract is a matter of principle as well as expediency.

The resolution was passed by the union's GM conference in Detroit last week and applied only to GM. However, if any changes were made by GM, it is doubtful if other firms with similar clauses would or could fail to follow suit.

Obviously, all parts of the resolution spotlight the significant changes in the purchasing power of the dollar since the contract went into effect.

Televised Football — Big deals in automotive advertising are the rule rather than the exception. However, GM's sponsoring of the televised college football schedule has created quite a stir.

GM purchased the 11-Game "package" from National Broadcasting Co. for $2½ million, a lot of money to put into one promotion. However, NBC estimates that the games will reach 55 million football fans every week for 11 successive Saturdays starting Sept. 20.

In addition to getting seven GM divisions before that many persons, the goodwill factor generated by millions of rabid fans is difficult to estimate.

TRAILERS: Demand Rise Expected

Truck-trailer manufacturers push for relaxation of controls to meet predicted demand increase . . . Orders in '53 may reach 70,000 . . . CMP restrictions still shackle industry production.

Truck-trailer manufacturers are trying to shake off the shackles of government controls. They want to be ready to meet an expected upturn in demand on an unhampered, competitive basis.

Last week, the industry won from National Production Authority an agreement to remove unit controls over production, beginning with first-quarter 1953. It is now concentrating on removal of price controls.

Controlled materials have generally been made available in sufficient quantities to permit production of about 60,000 to 64,000 units annually. This was approximately equal to the demand.

Replacements—However, a recent spot check made by the Defense Transport Administration, covering operators of about 20 pct of trailer transport, indicates that about 33,000 vehicles will be needed for replacement and expansion purposes during first half 1953. This should place demand for the year at 66,000 units.

Such estimates of the requirements are often on the conservative side. Manufacturers report that there has been a recent pick-up in business and that orders have been coming in faster and in a slightly increasing volume. This has led to speculation that 1953 requirements may near 70,000 units.

Still Controlled—The new NPA action does not necessarily mean a jump in production. Although the government will no longer tell the industry how many trailers it can make, materials will still be allocated.

Under other recent revisions of orders, about 80 pct of trailer manufacturing firms have been permitted to write their own controlled Materials Plan tickets under the present provisions of Reg. 1. However, these 170 firms, now virtually free of materials controls, represent only about 20 pct of the industry's capacity.

Manufacturers of the remaining 80 pct still must apply to NPA for materials allotments. However, the outlook is good for increased production above 1952 levels—if needed.

On the basis of production under CMP, the industry would require about 165,000 tons of carbon steel, including 32,000 tons of plate. It would also need about 52,000 tons of alloy steel to maintain present levels.

Stainless Short—On the strength of increasing availability of steel and aluminum, there should be enough additional supplies of both to take care of a modest increase. Biggest difficulty will lie in getting stainless steel.

Most likely the industry's major problem next year will be skilled labor. Good workers, especially welders and metalworkers, are hard to find and to hold. Aircraft plants and shipyards are luring them with higher wages.

Eased Nickel Use Helps Car Trim

Automotive brightwork is due for some improvement by a slight relaxation of the ban on use of nickel for plating non-functional parts.

Platers can now use 0.00005 in. of nickel which should result in some better results on automotive chrome parts. This is still only about one-tenth the thickness used before the emergency.

While far from satisfactory, the thin plating of nickel in the copper-nickel-chrome finish should help some in halting corrosion of automotive trim.

THE BULL OF THE WOODS — By J. R. Williams

YOU'RE NOT GOIN' TO SNOOP AROUND HERE FOR NEW IDEARS! I SHOULD OF FIRED YOU FOR THIS ONE, AN' FIRED AN' SUED YOU FER THEM THERE, AN' HAD YOU BEAT UP FOR SOME OF THESE--AN' SHOT YOU FOR ONE 'SPECIALLY-- HERE!
HE SEZ," THAT AIN'T YOU--IT'S JUST AN IMAGINARY CHARAC-TER I'M DRAWIN'"-- BUT I GUESS A GUY'S A FOOL FOR EVER HAVIN' WORKED ANY PLACE ELSE BEFORE GOIN' INTO THAT CARTOON GAME!
9-26
J.R.WILLIAMS
THE PRODIGAL
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THE SABRE . . . a blade that cleared the way to victory.

Through past military history, the Cavalry was used to break holes in the ranks of the enemy and clear the way for the main assault. The famous Cavalry sabre was used both as a cutting and thrusting weapon by the attacking Cavalrymen. It could withstand the severe blows of steel against steel in battle action.

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Heppenstall SHEAR KNIVES . . . clear the way for better production.

The way is cleared for better production when modern Shear Knives made by Heppenstall are part of your manufacturing line. Records of performance taken from plants where these knives are in daily use show:

- MORE CUTS BETWEEN GRINDS
- MORE UNITS PER BLADE
- LOWER OVERALL BLADE COST
- INCREASE IN PRODUCTION

To be certain of consistent high quality and productivity—always specify Heppenstall.

Heppenstall—*the most dependable name in forgings*

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Sales offices in principal cities

We Will Almost Meet Oil Pipeline Goal

Hope for up to 9000 miles of new pipelines for oil despite steel strike . . . Goal for 1952 was 10,000 miles . . . Forget OPS order asking ceiling price on bids—*By G. H. Baker.*

Despite the blow swung by the steel strike at the oil industry's plans for extensive pipeline construction, the rapid recovery in output of big-gage pipe now indicates that the mileage of new line put in place this year is going to be only slightly under the pre-strike goal: 10,000 miles of new lines in 1952.

The steel industry's fast comeback from the effects of the strike —plus oil industry ingenuity in driving through its construction programs — are pointing toward the biggest year of pipeline construction in history.

Hopes for Record — Previous record for line construction was 5000 miles of pipe laid in 1950. Officials now believe the close of this year will see between 8000 and 9000 additional miles of pipe in place, if not actually in service.

At least eight of 13 large crude oil pipeline projects and five of ten major-products lines are now scheduled for completion late this year or early next. Petroleum Administration for Defense and National Production Authority have approved allocations of enough materials to meet these goals. A total of 205,699 tons of line pipe have been allocated for fourth-quarter use.

Forget It—If your firm is a bidder on a government contract, you can now safely forget one controversial Office of Price Stabilization ruling. It requires every firm to state ceiling prices on invitations to bid, as well as on all other papers and documents related to the contracts in question. This provision has for all practical purposes been dropped.

NO REPEAL: AFL head William Green welcomes Gen. Eisenhower at New York AFL convention. Gen. Eisenhower declared he was against repeal of Taft-Hartley Law, favored some modification.

Specifically, the OPS demanded (in GOR 2, Rev. 2, dated July 21, 1952) that ceiling prices on all components incident to government contracts be listed in bidding. Strictly-military products and components were exempted, since they are not subject to price control.

"Won't Work"—But under protests from industry, the effective date of this provision was postponed to Oct. 15, and a second postponement (possibly an indefinite one) is now being prepared at OPS.

Industry has pointed out to OPS the impracticability and undesirability of listing ceiling prices. Most firms would rather comply with the simpler requirement which General Services Administration writes into its contracts.

GSA simply requires the contractor or subcontractor to state that his prices are not above the prescribed ceiling. This is considered by both industry and government attorneys to be an adequate and proper safeguard.

Loan Speed-Up — Smaller firms soon will be able to borrow government money from regional offices of the Reconstruction Finance Corp. It will no longer be necessary to apply to Washington.

Change-over in the long-standing practice of disbursing all funds in Washington is now being engineered by the Small Defense Plants Administration—at the request of small business leaders. SDPA is now concluding arrangements with RFC on a new system of loan disbursal.

As SDPA sees it, the prime advantage of the new system will be a speeding up in the handling of small-business loans. In addition, there will be a centering of responsibility for the loans on local officials, who have a more intimate knowledge of the needs of small businessmen.

Will Drag On—End of federal controls over prices, profits, wages and salaries will not necessarily spell the end of litigation against suspected violators of government controls in these areas.

This situation is as true today as it was during the World War II period of controls. Legal prosecution against firms and persons suspected of violations in the period 1942-1946 still are pending.

The Prosecuted—In the area of salary controls, for example, the Office of Salary Stabilization currently has more than 2000 firms under investigation for alleged violations of salary-control rules. More than 150 investigations have entered legal proceedings.

A board official discloses that one case alone may involve as much as $100,000 in tax disallowances, and the total potential may run into "several million" dollars.

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- Wood Working Benches
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- Flat Drawer Files
- Revolving Bins
- Hanging Cabinets
- Filing Cabinets
- Folding Chairs
- Work Benches
- Bench Drawers
- Service Carts
- Sorting Files
- Drawer Units
- Hopper Bins
- Tool Stands
- Shop Boxes
- Tool Trays
- Shop Desks

NPA: Shift In Emphasis Planned

Sawyer looks for end of controls on steel, copper, aluminum in early '53 . . . Wants to include NPA in new bureau . . . Tie production more closely to distribution—By *A. K. Rannells.*

Defense production probably will not hit its peak before the middle of next year, but it will have reached a stage by early 1953 where controls over steel, copper, and aluminum materials should be removed.

Such is the opinion of Commerce Secretary Charles Sawyer, who last week placed Richard A. McDonald in the post of National Production Administrator. At the same time, Horace B. McCoy was moved into the job of deputy administrator.

The new NPA chief has been on leave from Crown-Zellerbach Corp. since last February, serving NPA in varied capacities.

Now that Henry H. Fowler has moved into the job of Defense Mobilizer and has taken Defense Production Administration with him, the naming of a new NPA head makes the ultimate fate of that agency a little clearer.

New Bureau — An authentic source says that with production decontrol now in the air, NPA is to be made part of the proposed Bureau of Production & Distribution, which Secretary Sawyer intends to set up under his reorganization plan for the Commerce Dept. Details of this reorganization are to be revealed later this month.

NPA probably will continue to operate within the new Commerce Dept. bureau on a greatly reduced scale, much along the lines of the previous Office of Industry Cooperation. Main purpose will be to keep a finger on the nation's industrial pulse to recommend department policy on business.

It will also recommend standby plans for "emergency" production and tie in its activities with those of its sister division (distribution) in the new bureau.

Building Boom for '52

Despite materials shortages and government controls over materials and credit, new construction during 1952 has been moving at a record clip. Bureau of Labor Statistics estimates expenditures for construction during the first 8 months of '52 were $21,168 million compared with $20,144 million for the same period last year.

August spending was more than $3.1 billion—the highest 1-month figure in history.

While declines in industrial construction, as well as residential and commercial building have been feared, recent suspension of Reg. X is expected to give both residential and commercial construction a boost.

Suspension means commercial builders no longer must make down payments of one-half estimated construction costs. Home buyers no longer need pay one-third down. Down payments will be set by private lending institutions subject only to local, state or Veterans Administration requirements.

Shift Emphasis—Creation of the new bureau fulfills a plan Secretary Sawyer long has had in mind. He believes that production and distribution must go hand in hand, and says bluntly that in the past too much emphasis has been placed on production and not enough on distribution.

He feels now is the time to begin finding new markets and buyers and to develop new distribution techniques for the disposal of goods produced by a vastly expanded capacity. This should not wait until after defense procurements slack off.

Peak In '53? — He refuses to guess at a date other than his belief that it looks now as if the production peak will come sometime next year.

It is significant however that he already has instigated a study of distribution with instructions to report back to him before the end of the year.

Moreover, he has started out to finish the grass-roots trip he started last spring—which was interrupted by White House orders to come back to Washington and take over the steel industry.

On the trip he will hold meetings with industrial and business men, asking for both facts and opinions. These will be used to help him weigh the forthcoming report of his 19-man committee now studying the future of distribution.

AEC Group Classifies Data

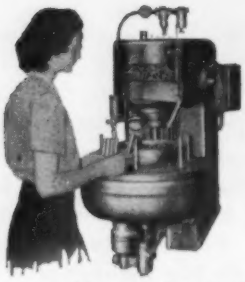
Six scientists in research, educational, and industrial fields now make up the Atomic Energy Commission Committee of Senior Reviewers, with a mission of advising on classification and declassification of technical data.

Two members of the earlier 4-man committee resigned, while Dr. Warren C. Johnson, associate dean of physical sciences, Univ. of Chicago, and Dr. J. M. B. Kellogg, division leader at Los Alamos Scientific Laboratory, were renamed to the group. New members of the reorganized committee are:

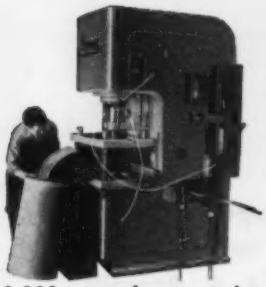
Dr. R. H. Crist, physical research director, Carbide and Carbon Chemicals Co. plant, Charleston, W. Va.; Dr. J. B. Richardson, associate professor of physics, UCLA; Dr. Thomas B. Drew, head, Chemical Engineering Dept., Columbia Univ.; and Dr. John P. Howe, head, Metals Div., Knolls Atomic Power Laboratory, Schenectady.

Rails Ask Steel's Support

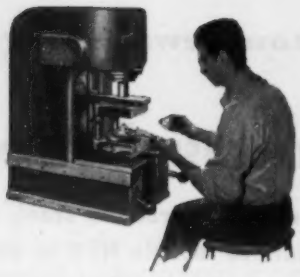
Smack in the center of Grand Central Station in New York last week was a giant freight car displayed by Eastern Railroads. At a press conference railroad executives called on the steel industry to support the roads' fight against strangling Washington regulations, throttling fair competition.



Assembly speed is doubled using Multipress to crimp a small brass contact to pen-type flashlight cases

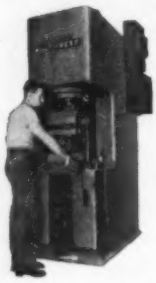


20,000 mop clamps a day is cost-cutting speed of 35-ton Multipress using roll-feed and 4-stage dies

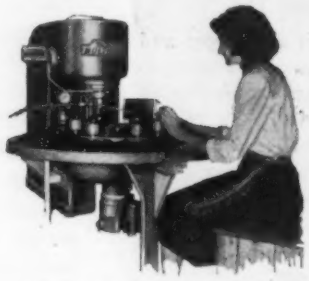


Dies stay sharp twice as long when Multipress is used in trimming flash and gate from die castings

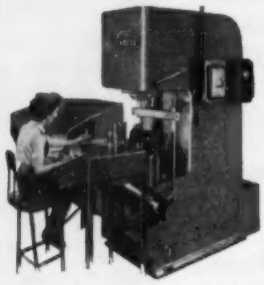
Scrap losses drop sharply as Multipress doubles staking speed on high precision voting-machine counter wheel



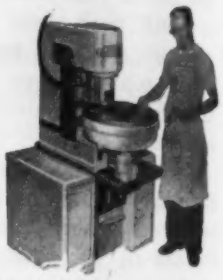
Six hours saved on every 100 finished units as famous electric cleaner plant adopts Multipress to clean cast housings



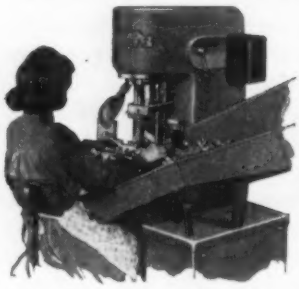
Output is boosted by 100% by famous toy train maker, staking 6-part assembly together with Multipress



At twice the speed of previous method, Multipress assembles bolts on electrical insulator holders



1600-per-hour rate slashes production costs when 4-ton Multipress is used to broach serrations on small cams



No down-time for repairs in 7 years for Multipress used to bend tabs and arch locks on steel clamps at high speed

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Shell Molding Makes a Modest Debut

Stanford U unveils what may be first shell molding oven on West Coast . . . Was built by graduate students . . . Power limits titanium output—By *T. M. Rohan.*

Shell molding came out of its shell in the West last week. The hottest new development in foundry practice in years made a modest western debut as Stanford University at Palo Alto, Calif., unveiled what is believed to be the first shell molding oven in the West . . . built by graduate students unable to find a single western foundry using the Croning process.

Successful castings have been made for one firm as an experiment and several others are on the verge of going into the revolutionary process after viewing the Stanford model.

Pioneer Work—The unit was begun in 1951 when Frank K. Shallenberger, associate professor of industrial management in the graduate business school, described larger units he had seen in the East.

Students approached all known western foundries for data and found most operators either hadn't heard of the process, thought of it only as a mass production unit, or were "too busy to experiment." Known mid-west and eastern users were secretive. Most preliminary information was obtained from plastics firms eager for a market.

In Own Backyard—One major western firm had contacted firms all over the country for data unsuccessfully and found a bonanza in its own backyard when it heard of the Stanford unit through a foundry salesman. All Stanford data is being made generally available to industry.

The oven, built mostly from odds and ends, would cost about $2000 to build commercially as a double ended unit and $3500 if it were automatic. About 1000 moldings could theoretically be produced daily, the limiting factor now being the 30 sec curing time under four heating elements totaling 9000 watts. Maximum mold size is 12 x 18 in. but this could be increased.

One man could operate two double ended units since the 5-lb molds handle easier than comparable 300-lb sand cores. One firm going into production estimates a 4 x 20 ft shell molding area will have the output of a present 1000 sq ft space.

Titanium Production—The limiting factor on titanium production at the Titanium Metals Corp. of America plant at Henderson, Nev., near Las Vegas, apparently is power supply. The plant now is producing well over a ton per day and has 151 million kwh annual firm power supply, sufficient for its ultimate rated yield of 10 tons daily.

When maximum capacity is reached, additional power will depend on government priority, already very high for the strategic metal, highly important in jet plane and armor production.

"There's a young man that'll bear watching, J. B.—always on the ball."

Northwest Line-Backer — Two steam generating plants in the Seattle area and a special Navy power train began backing up the critical Northwest power shortage last week. The two stations with 51,000 kw total and 10,000 kw from the Navy eight-car mobile generating station plus other private utilities were at peak output as the Columbia River flow hit an all time low.

In addition to aluminum loss of 395 tons daily, production of electrolytic zinc at Sullivan Mining Co., Wallace, Idaho, was down 20 pct or 1000 tons per month. Unless rain comes in the nick of time as it did last year, a power rationing program such as was planned then will probably go into effect soon.

Jap Steel — A 4000-ton shipment of Japanese hull plate was snapped up in Seattle last week by 28 firms from Washington and Oregon as well as Colorado, Wyoming and British Columbia. Gridwood Shipping Co., of Seattle, brought in the badly needed 72 x 360 in. plates, from 3/16 to 1 in. gage. Price was comparable to domestic warehouse prices in Seattle according to Gridwood which last year brought in 17,000 tons and expects to import 11,000 tons this year, mostly from the Fuji mill designed by United Engineering, of Pittsburgh, Pa., in the 30's.

Tonnage will be less this year because of direct buying by several midwest U. S. auto and tractor implement manufacturers. The firm is attempting to insure quality by furnishing mill papers and inspection certificates from Lloyds of London.

Can U. S. Regain European Market?

Ebb of defense orders focuses industry's eyes on re-entry in foreign market . . . Dollar shortage, increased foreign output are main problems . . . Labor still short—*By E. C. Beaudet.*

With defense requirements for machine tools levelling off, the problem of recapturing overseas markets lost to foreign builders is becoming increasingly important to American machine tool builders. Normally foreign sales account for 25 pct of total U. S. machine tool shipments. During the past year and a half, our own defense needs, a shortage of dollars in foreign lands and build-up of Western European machine tool production has caused this percentage to drop considerably.

With the machine tool industry facing what looks like a return to normalcy, it will be making every effort to regain its former status in European markets. Greater strides toward this objective can be made when and if present distribution regulations are further relaxed and defense needs become fewer.

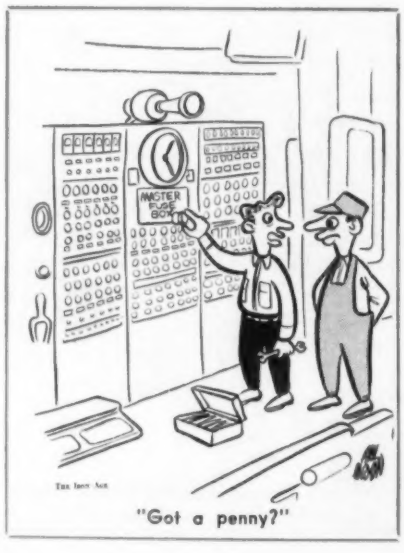
Competition Stiffer—Indications are that foreign tools will prove greater competition for American equipment than ever before. At present, European machine tool capacity at least equals and probably exceeds pre-war levels.

German machine tool builders have greatly increased their capacity and have improved technically as well. Operations in that country now are running 500 pct above 1948. In the United Kingdom, builders are producing at full capacity. Output is now 130 pct of 1948 production.

Variation between German and U. K. operating rates is due to the fact that U. K. builders were for the most part operating at capacity in 1948 while the German base for that period was considerably lower. Swiss producers are also enjoying a high level of activity.

Despite the record of these three nations, European plants are not operating at full capacity. Their present status is similar to that of the U. S. Some machine tool builders have backlogs extending over a 2 year period. Others, making mostly general purpose equipment, are only operating at 30 pct of capacity. In Belgium, France and Italy where technical acceptance hasn't yet reached that of U. S., German, U. K. or Swiss tools, production is estimated at less than 60 pct of capacity.

Dollar Shortage — One of the biggest obstacles to our recovery of the foreign market will be the shortage of U. S. dollars in these countries. Some feel that if it were not for the need of rearming of Western Europe, the situation would have been corrected earlier. Necessity of expanding defense output in these countries kept European manufacturers from producing goods for export which would have brought in dollars.



"Got a penny?"

Aside from the dollar shortage problem, the increased capacity of foreign builders, advances in European technical know-how and decline of distributor networks to sell and service U. S. machine tools are other obstacles.

Optimism — Some machine tool men believe prospects are not disheartening, however. They claim the re-growth of European industrial activity to higher than pre-trial activity has created greater demand for machine tools.

Added to the credit side is the America's greater selling know-how and leadership in technical advancements. While European distributors couldn't get American tools they didn't break contact completely. As machine tools from the U. S. become more available business will be resumed.

Wanted—Recruiting of labor to fill openings in machine tool plants is still a prime order of business for some companies. Last week, Warner & Swasey Co., Cleveland, announced plans to step up employment programs for all three of its divisions.

The company has an extensive backlog of defense orders for machine tools, said Charles J. Stillwell, president. Not until this is worked off will the firm be better able to serve the replacement market created by civilian manufacturers who need new machine tools.

So far, Warner & Swasey has been unable to realize its hoped-for production of textile equipment due to defense requirements. However, its new weaving machine is now on an expanded schedule, with orders extending into the last half of next year.

With employment around 3400 people, the firm expects to continue at this level or possibly increase the number of employees.

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Advantages of Ohio Steel Foundry Co.'s "machine-proved" steel castings are covered in a new mailing piece. Utilization of Ohio's complete casting and rough-machining facilities makes it possible to use equipment presently tied-up doing one or more machining functions for regular production work. *Ohio Steel Foundry Co.*

For free copy circle No. 14 on postcard, p. 87.

Heat applications

Heat in Harness is a booklet primarily designed to tell the aircraft gas combustion industry about the technology and engineering achievements involved in the production of Janitrol aircraft heaters. However, general information is also given on the field of heat application, ranging from fundamental studies in research labs to use of furnaces in steel mills. *Surface Combustion Corp.*

For free copy circle No. 15 on postcard, p. 87.

Cutting gear teeth

Of particular interest to small shops and toolrooms is Cincinnati Milling Machine Co.'s revised booklet, *Cutting Gear Teeth on a Milling Machine.* The publication has been enlarged and completely rewritten to conform to latest practices. Instruction is given on cutting worms and worm-wheels, and spur, helical and bevel gear teeth. *Cincinnati Milling Machine Co.*

For free copy circle No. 16 on postcard, p. 87.

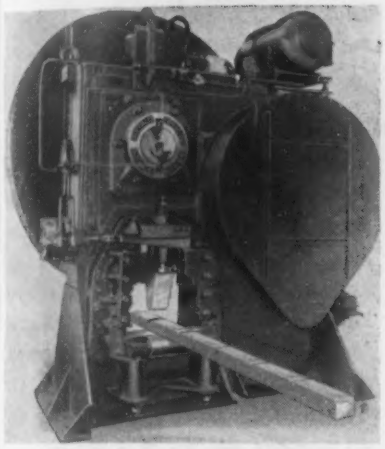
Precision level

Outlined in a new circular is Pratt & Whitney's 15-in. Precision Level. The instrument is reported to provide the accuracy necessary for determining a true level in the manufacture, assembly and maintenance of machine tools. Designed for craftsmen who must work to close limits in a horizontal plane, the Precision Level is a positive inexpensive means of checking the leveling of beds, ways, surface plates, jigs, fixtures and other surfaces and accessories. *Pratt & Whitney.*

For free copy circle No. 17 on postcard, p. 87.

NEW equipment

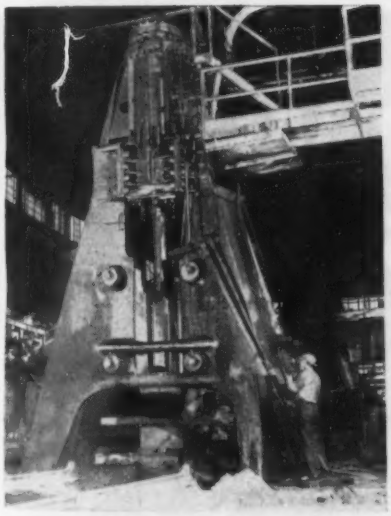
New and improved production ideas, equipment, services and methods described here offer production economies . . . fill in and mail postcard on page 87 or 88.



Combination billet-breaker and shear developed

Of help to a manufacturer with a contract for forging shells and the problem of deciding whether to shear the shell stock or nick and break it, is a new machine capable of both breaking nicked billets and shearing them, with regular shear knives either hot or cold. An automatic air operated holddown efficiently clamps the billets while breaking them into multiples. Tool steel knife seats may be added when the machine is to be used as a shear. Conversion to a regulation billet shear takes about 1 hour. Machines are available in sizes from No. 10 to No. 17. The largest has a shearing tonnage pressure of 2200 tons; the smallest, 325 tons. The machines' air operated jaw clutches are designed to withstand very heavy shock loading. The main frame construction is of all welded rolled steel plate design. *Buffalo Forge Co.*

For more data circle No. 18 on postcard, p. 87.



"Floating" hammer forges nickel alloy ingots

A new, steam-operated hammer that literally floats on a concrete raft in a concrete basin has forged its 15,000th ingot, for a total production of 75 million lb. With an overall weight of 521 tons, this floating hammer converts huge nickel alloy ingots from the melt shop into workable forms for further processing as sheet, strip, rod, wire, tubing, and other commercial forms. An elaborate arrangement of springs eliminates ground vibration which reduces maintenance costs throughout the plant as well as in the forge shop. Legs and anvil of the hammer are bolted to a concrete base that rides on a rubber spring, supported by a second block of concrete of similar size. Both concrete blocks form the raft. Bottom of the second concrete block in turn rides on 432 steel coil springs. These springs are mounted on a concrete floor supported by cement piles. Altogether, the foundation reaches 40 ft below the floor of the forge shop. *Huntington Works, International Nickel Co.*

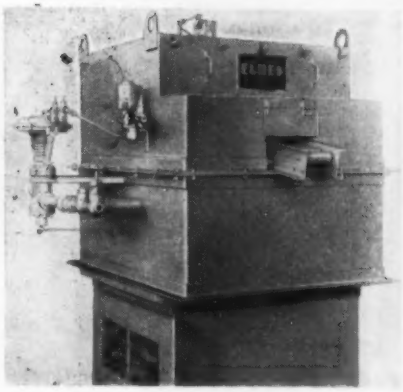
For more data circle No. 19 on postcard, p. 87.

Packaged trailer dumps have 20 cu yd capacity

A new line of single axle packaged trailer dumps have up to 20 cu yd capacity. Body of Model 12 is constructed of 10 gage steel. It is 88 in. wide inside, has 32-in. sides and 44-in. ends. Standard equipment includes 12-in. steel removable side boards. Length can be varied to 18 ft to provide any desired yardage capacity. Dumping is handled by a hoist consisting of two 7-in. twin ram single stage telescopic cylinders. Rated hoist capacity is 18 tons. Trailer suspension is of heavy duty alloy main and auxiliary springs, one fixed and one adjustable radius rod, with flat top frame section. Tire sizes and brakes meet individual load and service needs. *Galion Allsteel Body Co.*

For more data circle No. 20 on postcard, p. 87.

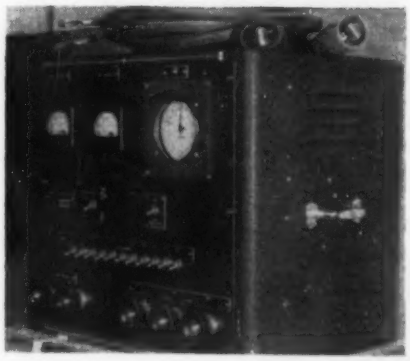
Turn Page



Cabinet automatically removes scale from billets

The Elmes automatic billet descaling cabinet with removable scale basket is equipped with gravity conveyer head, is fully automatic in operation, and is available in pit-mounted and floor-mounted models. Spray ring is fitted with six spray nozzles which completely encircle the billet. Nozzles are directed at both ends of the billet to completely remove scale at both ends. Nozzles are readily accessible for replacement. Roller conveyer is arranged to withstand extreme temperatures. The unit is all-welded steel construction with rustproof screening in the scale basket. The cabinet can be supplied with necessary operating controls for use with existing accumulator system. *American Steel Foundries, Elmes Engineering Div.*

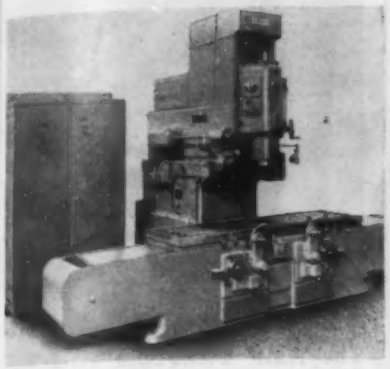
For more data circle No. 21 on postcard, p. 17.



Instrument tests circuit breaker in aircraft

A portable tester for testing circuit breakers in the electrical system of modern aircraft determines the elapsed time it takes the circuit breaker under test to trip out. It will test circuit breakers rated to 150 amp on a 28 v dc. The test panel is of insulating material and provides mountings for a dc voltmeter, a dual scale 0 to 30 amp and 0 to 150 amp dc ammeter, 30 and 150 amp negative input terminal ports, a dc ammeter range selector switch, eleven loading switches, and a 1000 second manual reset timer. Ten feet of cable with two test clips, one red and one black, are included with the tester. *Greer Hydraulics, Inc.*

For more data circle No. 22 on postcard, p. 17.



Electronic units control milling machine

Electronically controlled drives permit infinitely variable cutting speeds in a new heavy-duty milling and die sinking machine developed by Reed-Prentice Corp. The electronic controls allow a selection of speeds ranging from ½ to 25 ipm without gear change. Two Thymotrol controllers provide full wave rectification, armature control, reversing, overload and undervoltage protection, armature voltage-drop compensation, and dynamic braking to bring the motor to a smooth, quick stop from any speed. The controllers guide three GE 1½ hp, dc motors which drive the table, cross slide, and vertical slide. Dust-tight, floor mounted cabinet contains the electronic units. *General Electric Co.*

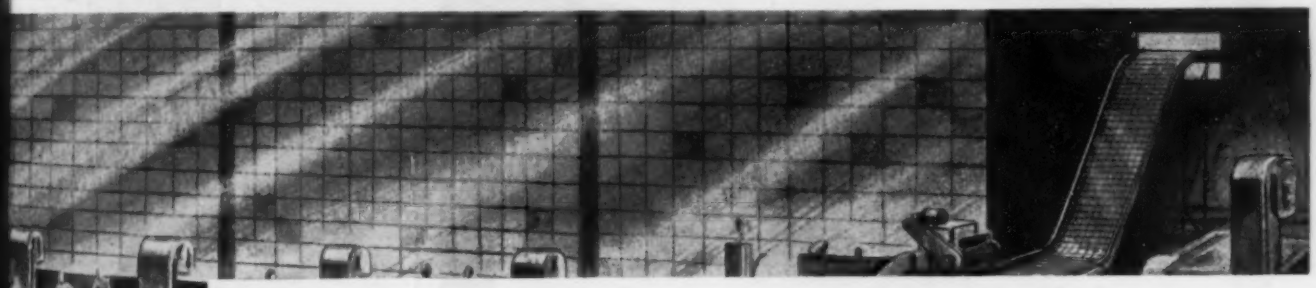
For more data circle No. 23 on postcard, p. 87.

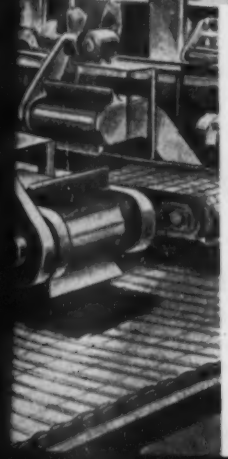
Fork lift truck is gasoline or electric powered

Built for ruggedness and long serviceability in the 6000 to 7000-lb work range, the new Utilitruc is available in two models—gasoline or electric powered. Compact in every respect, it turns within practical aisle widths and is highly maneuverable in close quarters. Center-pivoted steering axles, with rubber mounted bushings and angularly placed tie rods to absorb road shocks, are standard on both models. Travel speed of the electric model has been increased to 6 mph and its lifting speed is 12 to 16 pct faster. Automatic acceleration eliminates jerky starts and protects the motor from abusive application of power. A large battery compartment permits use of a wide range of battery sizes. *Clark Equipment Co.*

For more data circle No. 24 on postcard, p. 87.

Turn Page





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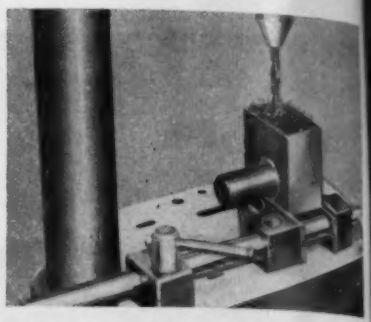

Safety vise

The AMF Float-Lock safety vise can be quickly and easily mounted and locked in practically any position on a drill press table. Regular, end or angle drilling can be done. The vise becomes a jig when duplicate pieces are required or repeat assembly operations must be made. With a band saw model an operator can do all types of sawing without touching the material. *Float-Lock Corp.*

For more data circle No. 25 on postcard, p. 87.

Bright gold

Bright gold process produces mirror bright, hard gold deposits from flash gold plating to exceptionally heavy gold deposition. No complicated equipment or unusual racking procedures are required. Formulation of bath is simple and solution is maintained by addition of prepared maintenance salts. Process can be operated at room temperature. *Sel - Rex Precious Metals, Inc.*

For more data circle No. 26 on postcard, p. 87.

Hydraulic shear

New guillotine shear cuts through steel strip measuring 4 x 5/16 in. Activated by a 2 hp electric high-pressure pump unit equipped with 3 phase, 220/440 v, 60-cycle motor, the shear is operated by a choice of hand or foot valve control. Connecting hose, 25 ft long, provides ample mobility. Shear unit weighs 65 lb. *Manco Mfg. Co.*

For more data circle No. 27 on postcard, p. 87.

Turn Page

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OF ROLL MAKING

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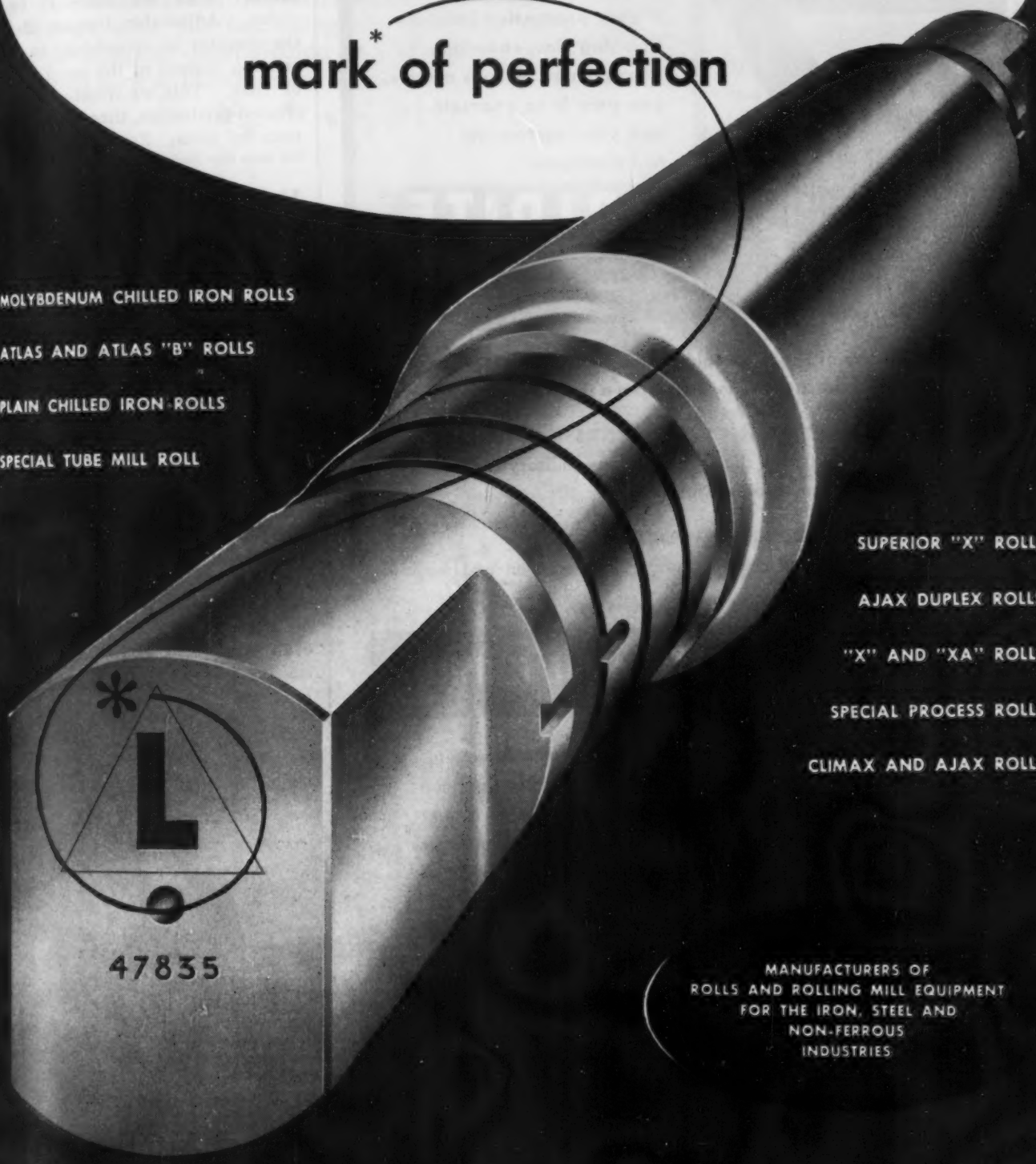

MOLYBDENUM CHILLED IRON ROLLS

ATLAS AND ATLAS "B" ROLLS

PLAIN CHILLED IRON ROLLS

SPECIAL TUBE MILL ROLL

SUPERIOR "X" ROLLS

AJAX DUPLEX ROLLS

"X" AND "XA" ROLLS

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—New Equipment—

Continued

Universal Grinder dog

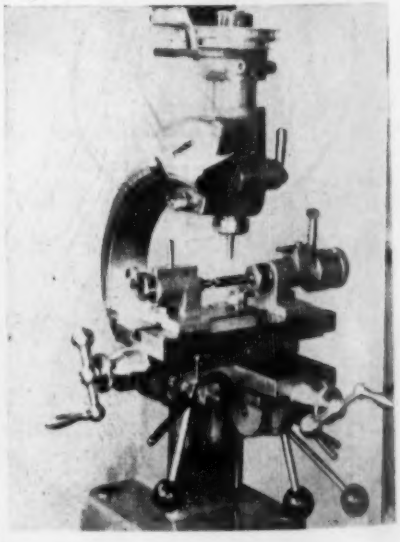
The Red-E universal grinding machine dog has brass face design which is claimed to eliminate marring and damaging of soft, finished or threaded work. It is constructed to assure uniform, well balanced operation. Universal grinder dogs are made in two styles. Adjustable feature offers the operator an opportunity to use one dog instead of the usual three or four. This contributes to increased production, time-saving and material costs. *Ready Tool Co.*

For more data circle No. 28 on postcard, p. 87.

Universal machine tool

A Micro-Miller manufactured by Nothelfer & Soehne, Germany, is said to be equally suited for drilling, milling, boring, grinding, and turning operations of small parts. A half circle protractor dove-tail guides the spindle assembly into a vertical, horizontal, or any intermediate position. Milling head with motor and V-belt drive can be locked in any position of a 90° graduated arc. Horizontal table measures 3½ x 8⅝ in. Longitudinal travel is 4 in.; cross travel 3⅜ in. and vertical movement 4¾ in. These are operated by hand-operated crank and feed screw or a quick-action lever for production runs. Change-over from one type to other is by an instant-release lock. *Eric R. Bachman*

For more data circle No. 29 on postcard, p. 87.



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These outstanding Heavy Bulk Materials Handling installations are featured in the new Heyl & Patterson industrial film "Modern Materials Handling." Don't miss this fascinating film that tells the handling and transportation story of coal and ore from mine to blast furnace.

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The Finest Coal and Ore Bridge Ever Built

See the installations illustrated on this page and other H & P Heavy Bulk Materials Handling Equipment IN ACTION at the Iron & Steel Exposition . . .

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This new Heyl & Patterson industrial film, "Modern Materials Handling" is now available for showings to industrial and engineering groups. Film is 16 mm. with sound and color.

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Get More Production with GORHAM "M-40-B" Tool Bits!

Get more out of your machine tools . . . raise your production curve . . . with Gorham "M-40-B" turning tools! Use "M-40-B" wherever the application of a Super High Speed Steel is indicated, as in machining heat treated alloy steels with large amounts of stock removal at high surface speeds.

"M-40-B" is a Super Moly grade with performance characteristics comparable to those of super tungsten high speed steel. It has extremely high red hardness, high Rockwell hardness, and offers maximum toughness and abrasion resistance. You can take heavy roughing cuts with it at high surface speeds and feeds . . . use it for high speed finish cuts as well.

"M-40-B" comes in square tool bits, 11 stock sizes, and in 23 stock sizes of rectangular turning tools. Bits and turning tools are accurately ground, uniformly hardened, ready to sharpen. Special sizes and shapes to your order. Illustrated with prices are three popular size "M-40-B" tool bits. See your distributor, or send direct for a trial order.

"M-40-B" is one of three cutting tool materials developed by Gorham. Others are Gorham "Standard", for the commercial field, and "Gormet", for turning soft or abrasive stock. They're completely described, with size and price lists, in a new free bulletin. Send for your copy today.

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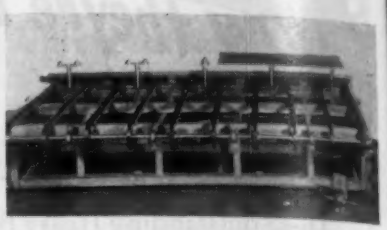
WEST COAST WAREHOUSE: 576 North Prairie Ave., Hawthorne, Calif.

—New Equipment—

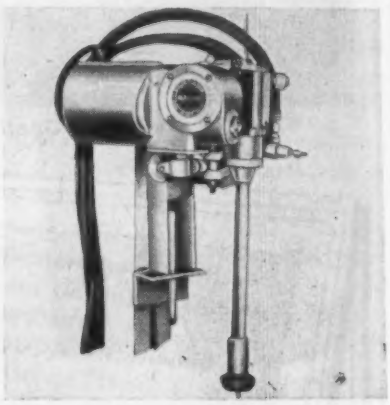
Continued



Materials handling

A new piece of materials handling equipment, called a Stripveyor, automatically picks up cut strips beyond the shear bed. It transforms manual handling to a wholly mechanical operation thereby promoting safety and increasing shear efficiency to 100 pct. Any gage sheet metal up to 3/8 in. and widths as wide as allowable by a 24-in. back gage can be handled with this equipment. Its height is adjustable to 45 in. Speed is synchronous with shear speed. *Fried Steel Equipment Mfg. Corp.*

For more data circle No. 30 on postcard, p. 87.



Regalvanizes parts

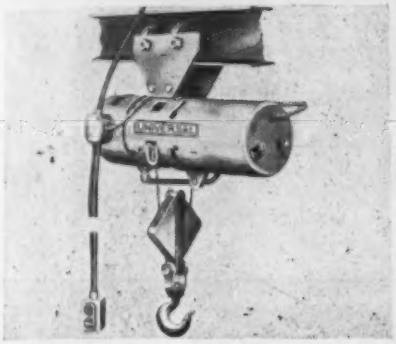
New equipment that replaces galvanized surface on butt-welded parts attaches to the forming and butt-welding machine. It stops and starts with the welding and forming equipment and is positive in application. Speed of replacing the coating is set to conform with the forming and welding equipment. Average is 100 fpm, but this can be increased or decreased to correspond to manufacturing speeds. Although designed for round tubing and containers, the manufacturer may find it adaptable to other applications where it is desirable to fabricate from galvanized material. *Metallizing Co. of America.*

For more data circle No. 31 on postcard, p. 87.

Electric hoist

A new electric hoist that incorporates into its assembly the heliocentric gear, has a center drum with a hollow shaft. Through the center of this shaft, passes the high speed drive shaft from the high-torque electric motor to the input shaft of the gear. Mounted on the input shaft are the two eccentrics which operate the gear mechanism. The electric brake is on the outer end of the gear box. All rotating elements are laid in heavy duty anti-friction bearings, and all gear elements are hardened and ground. *Universal Gear Corp.*

For more data circle No. 32 on postcard, p. 87.



Hardening compound

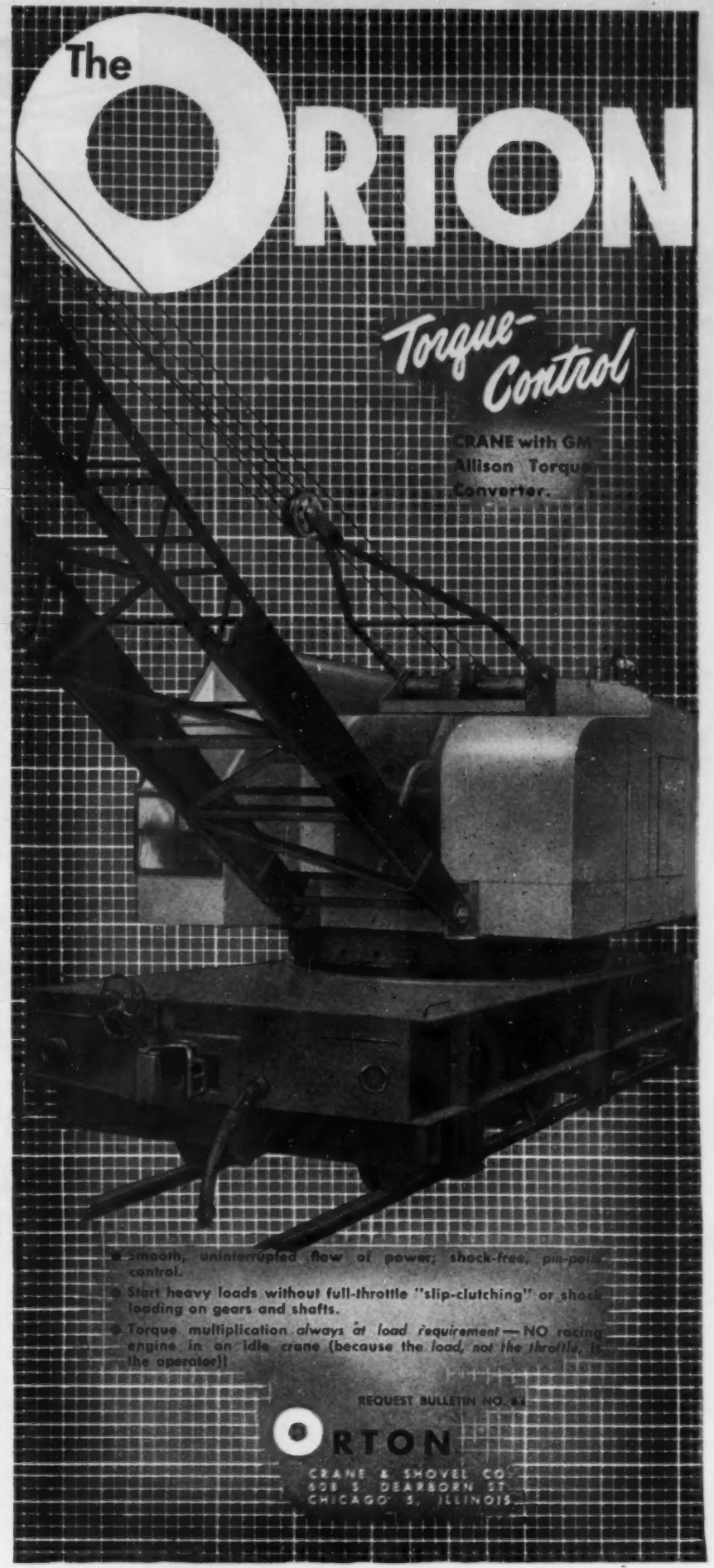
Hard-N-Tuff, a new steel hardening compound, is recommended for case hardening jobs — in production, in maintenance of tools and parts, or in emergency on-the-job hardening. It is quick, safe and easy to use, requiring no special equipment. The part is heated, rolled in the powder, reheated and quenched. Tool and part life can be increased up to 300 pct, it is reported. *Doughty Laboratories, Inc.*

For more data circle No. 33 on postcard, p. 87.

End point control

A cut-off relay for providing end-point temperature control for processes requiring automatic shut-downs and manual resetting has been developed. The relay operates with an electric temperature or pressure controller and a solenoid or motor-operated valve. The relay has a capacity of 13 amp at 115 v, and 6.5 amp at 230 v. It measures 5¼ x 4 3/16 x 2⅝ in. *Minneapolis-Honeywell Regulator Co.*

For more data circle No. 34 on postcard, p. 87.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Smooth, uninterrupted flow of power; shock-free, pin-point control.
Start heavy loads without full-throttle "slip-clutching" or shock loading on gears and shafts.
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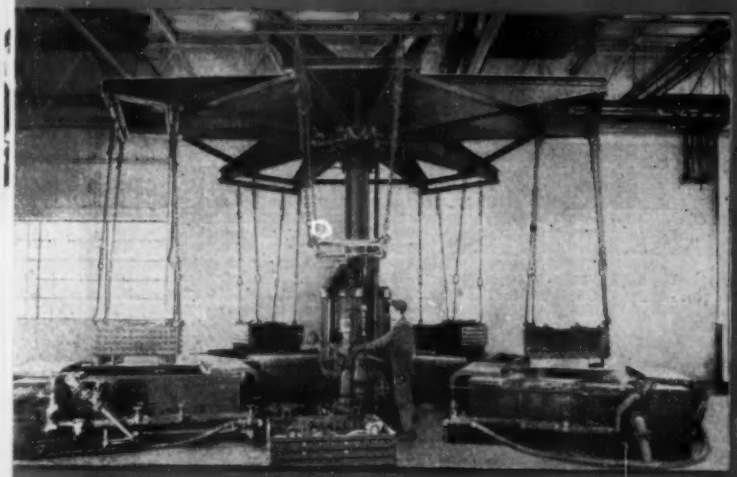
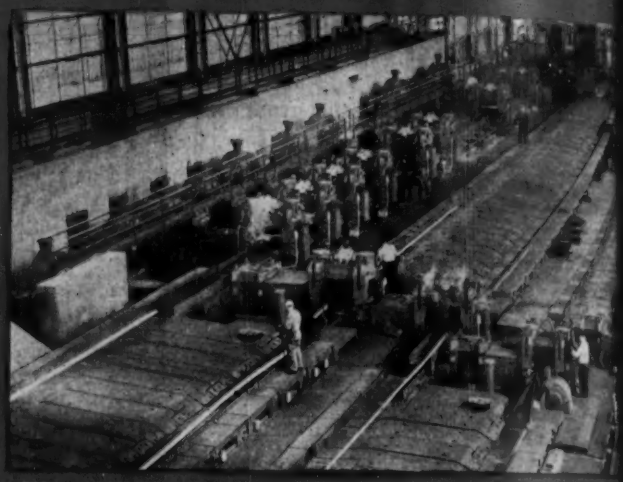
MESTA 56" FOUR-HIGH, FIVE-STAND TANDEM HIGH-SPEED COLD MILL

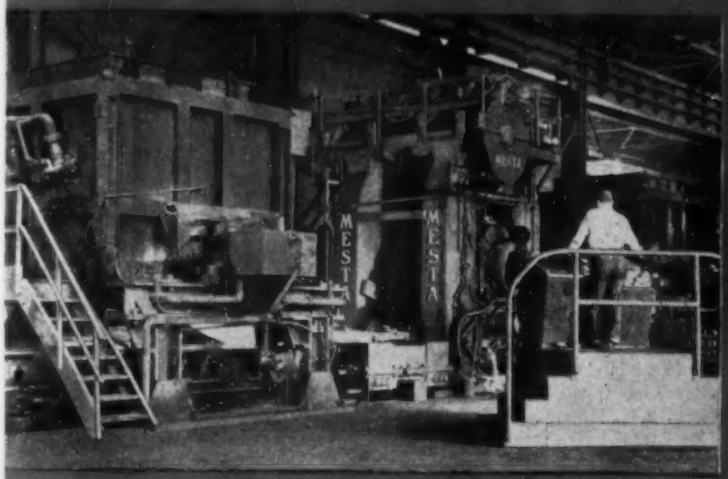
PAIR OF MESTA HOUSINGS FOR COLD ROLLING MILL LOADED FOR S



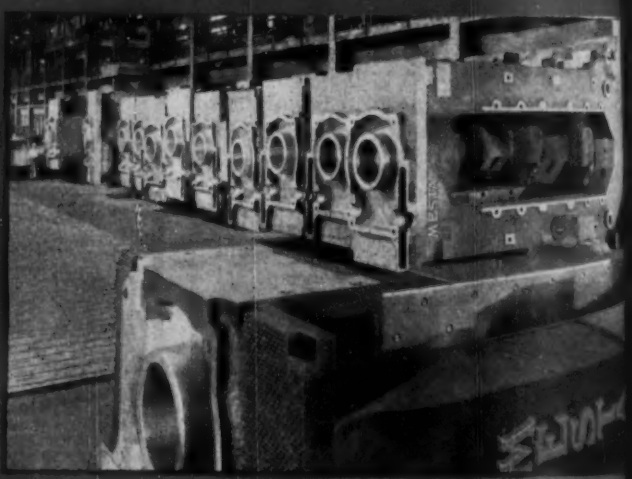
MESTA 32" PATENTED PICKLING MACHINE



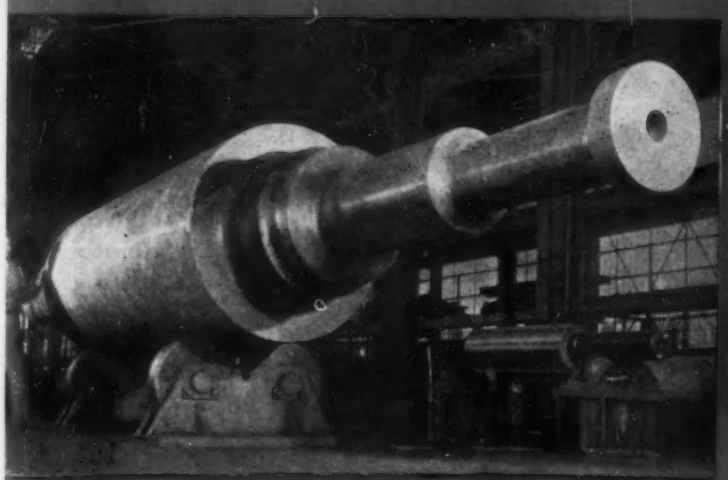
MESTA MERCHANT MILL WITH PACK ANNEALING COOLING BED AND EQU



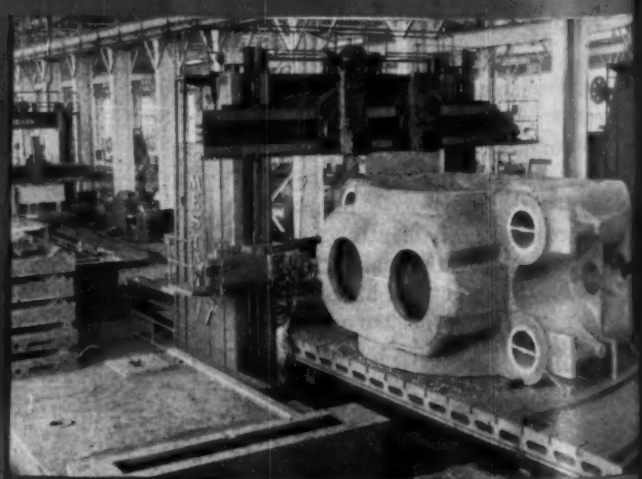
MESTA 42" FOUR-HIGH REVERSING HOT STRIP MILL



GROUP OF MESTA ROLLING MILL HOUSINGS ON ERECTING FLOO



MASSIVE GENERATOR ROTOR SHAFT FORGED FROM INGOT POURED IN THE MESTA OPEN HEARTH DEPARTMENT



MACHINING CAST STEEL CAP FOR LARGE HYDRAULIC PRESS ON A MESTA HEAVY DUTY PLANER

The Iron Age

SALUTES

George S. Rose

Speaks softly but carries out the duties of a top executive position with notable skill.

TEMPERAMENTAL geniuses can be worth their weight in gold. And they usually have a highly-developed, if unconscious, talent for headline grabbing. But it's the quietly industrious executives who keep the wheels turning and the monkey wrenches out of the machinery. We're thinking of men like George Rose, hardworking secretary of the American Iron and Steel Institute.

George isn't much on headlines, or any other kind of publicity for that matter. But hundreds of people in the steel industry respect and admire his work. He's probably best known for his part in establishing the Institute's statistical section and in unifying British and American steel specs during the war. But his many other contributions to the industry are less well known—except to those who have worked with him.

George, a born New Yorker, moved to Philadelphia when his father became sales manager for American Steel & Wire Co. He showed his executive ability while still at Penn State, where he managed the football team on which the famous Hugh Bezdek was a star.

After graduation, he worked for 3 years as an assistant metallurgist with Alan Wood Steel Co. He shifted to Crucible for another year at the same job and then joined American Steel & Wire as a salesman. In 1934 he came to the Institute to do notable work on the NRA Steel Code. He's been doing the same caliber work there ever since.

George lives in Riverdale, N. Y., with his wife, whom he courted while at Penn State. A color photography bug, he enjoys travel, and likes to bowl when he can.

HOW TO SAVE MONEY
Machining Mill Rolls
with
KENNAMETAL TOOLING

DEMONSTRATED
at
KENNAMETAL EXHIBIT
SPACE
130 to 132
IRON and STEEL EXPOSITION
CLEVELAND, OHIO
AMPHITHEATRE
SEPT 30 —
OCT. 3, 1952

Our exhibit will feature: an array of tools for machining rolls — rough turning, profiling, and plunge forming; typical tool layouts, with operating and performance data; finished rolls machined with Kennametal tools. Other significant steel mill tooling operations will be depicted, such as: milling, wheel boring, and trepanning.

KENNAMETAL
CEMENTED CARBIDE TOOLING
ENGINEERED **FOR STEEL MILLS**

STAR PERFORMERS at KENNAMETAL SHOW

O.D. TURNING TOOL — PROFILING TOOLS — PLUNGE FORMING TOOL

The Iron Age INTRODUCES

Fred R. Ellinger, elected president, WALDOM ELECTRONICS, INC., Chicago.

Kempton Dunn, a vice-president and treasurer, was elected a director, AMERICAN BRAKE SHOE CO.

E. H. Fisher, promoted to director of marketing, THE OLIVER CORP., Chicago.

Jack Shamroth, appointed vice-president in charge of manufacturing and engineering, Bowser Technical Refrigeration Div., BOWSER INC., Terryville, Conn.

Carl R. Sare, elected vice-president, THE W. W. SLY MFG. CO., Cleveland.

Nelson G. Spoth, promoted to vice-president in charge of sales, KOLCAST INDUSTRIES, INC., Cleveland.

William Sorensen, appointed vice-president in charge of manufacturing and sales, Atlantic Div., KELITE PRODUCTS, INC., Los Angeles.

Ralph A. Anderson, appointed vice-president and chief engineer, PANASCAN, INC., Chicago.

Lawrence L. Hurd, promoted to director of public relations, BUFFALO-ECLIPSE CORP.; and **Colman Curtiss, Jr.**, made assistant general sales manager, Buffalo Bolt Co., Div. of the corporation.

John Alico, appointed project engineer, LAKE ERIE ENGINEERING CORP., Buffalo.

William J. Thomas, named to the board of directors, Tubular Products Div., THE BABCOCK & WILCOX CO., Beaver Falls, Pa.

R. A. Wells, elected to the board of directors, DIESEL POWER INC., Pittsburgh.

George H. Williamson, named head, Niles, California branch, AMERICAN CHEMICAL PAINT CO.

H. J. Blum, named manager, Ordnance plant, San Pablo, Calif., RHEEM MFG. CO. He succeeds **Fred Wood**, who has been transferred to regional manager, at Linden, N. J.

C. W. Hawley, named manager of original Equipt. Sales, Merchandise Div., THE JEFFREY MFG. CO., Columbus, Ohio; and **Lester L. Grooms**, becomes sales manager of Products Engineering Div.

William R. Call, named service supervisor, Mid-Atlantic region, General Machinery Div., ALLIS-CHALMERS, Milwaukee.

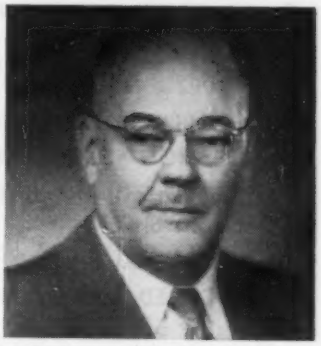
James M. McWhirter, appointed manager of Wyandotte Works, PENNSYLVANIA SALT MFG. CO., Philadelphia; **J. T. Gormally**, appointed assistant to the production manager, Philadelphia office; and **Ritner W. Tomlinson**, named superintendent, Calvert City plant.

Earl J. Mills, becomes manager, Chicago branch sales office, DIAMOND ALKALI CO.; and **John W. Kennady**, becomes manager, Southwest District sales office, Houston, Texas.

Nils C. Johanson, appointed resident demonstrator, Cleveland area, Grinding Machine Div., NORTON CO., Worcester.

William M. Lawrason, appointed manager of purchasing, ATLAS STEEL LTD., Welland, Ont.

MERYL H. GEISKING, appointed assistant to president, Tennessee Coal & Iron Div., U. S. Steel Co., Pittsburgh.



HARRY C. MARTIN, director of research and development, Carborundum Co., Niagara Falls, N. Y., elected vice-president of the company.

L. A. DIXON, JR., appointed vice-president, Meter and Valve Div., Rockwell Mfg. Co., Pittsburgh

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Personnel

Continued

John E. Angle, appointed general superintendent, Gary Sheet & Tin Mill, U. S. STEEL CO., Pittsburgh. He will succeed Charles A. Ferguson, who is retiring.

L. Camel, promoted to divisional general sales manager, Industrial Chemical Div., DETREX CORP.; and **D. E. Williard,** promoted to division general sales manager, Industrial Equipt. Div.

John H. Strome, appointed sales manager, INLAND STEEL CONTAINER CO., Chicago; and **Thomas T. Crowley,** named assistant to the president.

Eric O. Prange, appointed district manager, Detroit branch office, CLAUD S. GORDON CO.

C. B. Lewis, promoted to assistant chief inspector, TEMCO AIRCRAFT CORP., Dallas.

S. S. Nicholson, named supervisor of new Packing & Materials Handling Div., AMERICAN CAN CO.

Norman Dirks, joins MODERN STEEL TREATING CO., Chicago, as technical director.

George E. Kerr, made sales engineer, LOBDELL UNITED CO., Wilmington, Del.

Phil D. Gardner, appointed assistant manager, Eastern Products Service branch, A. O. SMITH CORP., Milwaukee; **T. A. Sullivan,** named product manager for the pressure vessels, Process Equipt. Div.; and **R. T. Springate,** becomes superintendent of production control, same division.

C. R. Sizemore, promoted to general plant manager in charge of Neville Island plant operations, PITTSBURGH COKE & CHEMICAL CO., Pittsburgh.

Leo Wieder, appointed purchasing agent, BUILDERS STRUCTURAL STEEL CORP., Cleveland.

Wilson Oeklers, appointed general purchasing agent, PHILCO CORP., Philadelphia.

Jack S. Brundage, joins New England sales and service staff, Organic Coatings Div., UNITED CHROMIUM, INC.

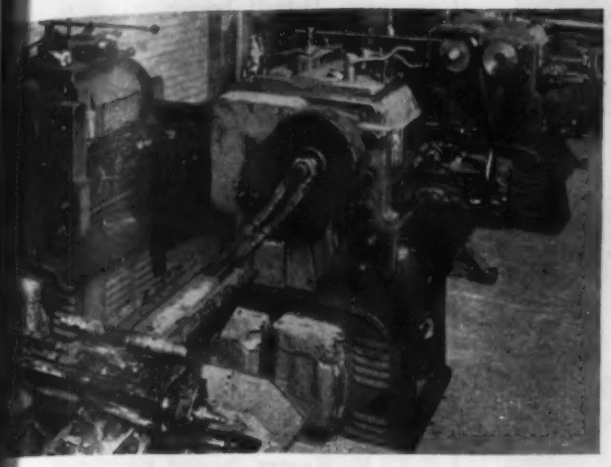
DOUGLAS C. LYNCH, elected vice-president in charge of sales, Brush Development Co., Cleveland.

EUGENE V. IVANSO, named head of metallurgical engineering and research, Detroit Testing Laboratories.

SHELLER L. STEINWENDER, appointed vice-president-sales, Scaife Co., Oakmont, Pa.

CARL H. MUELLER, appointed director of engineering, Lincoln Engineering Co., St. Louis.

DEFENSE PLANT DE-MOTHBALLED FAST WITH THE HELP OF TWO SUN PRODUCTS



BEFORE: The machinery in this Navy-owned shell-making plant stood idle—coated with a rust preventive—for 5 years after World War II. When asked to reactivate the plant in three months, the U. S. Hoffman Machinery Corporation anticipated a complete machinery teardown for cleaning, because the rust preventive had seeped into the working parts.

AFTER: No teardown was needed. Sun Spirits did the external cleaning job and the detergency of Sunvis H.D. 700 Oils the internal job—cleaning out parts and freeing hydraulic systems. Thanks to the effectiveness of these products, the job was completed and the plant put in operating condition within the three months specified by the Navy.

Recently the U. S. Hoffman Machinery Corporation was asked to reopen a World War II Navy-owned shell-making plant and start production in three months. The machinery, idle for 5 years, had been protected by an external layer of rust preventive. Headstocks, gear units and hydraulic lines were among the parts coated, and unfortunately some of the protective material had seeped into them. It looked as if the machinery might have to be torn down to be cleaned.

Hoffman invited Sun and several other oil companies to survey the machinery and suggest cleaning methods. The company chose Sun's recommendations on the basis of their soundness, as well as on Sun's record for reliable service in other Hoffman plants. The Sun products used eliminated the need for any dismantling. Sun Spirits did the external cleaning job. Sunvis H.D. 700 Oils freed up the hydraulic systems, many of which were extremely sluggish; the detergency of these oils flushed away every last trace of sludge and rust preventive.

Throughout the entire cleaning and recharging process, Sun representatives stayed on the job. As part of Sun's regular service, they trained the oilers, helped work out an inventory control system, and set up lubrication schedules. The terms of the Navy contract were met, and vital defense production was started on schedule. In the year and a half that has since elapsed, there have been no machine failures traceable to poor lubrication.

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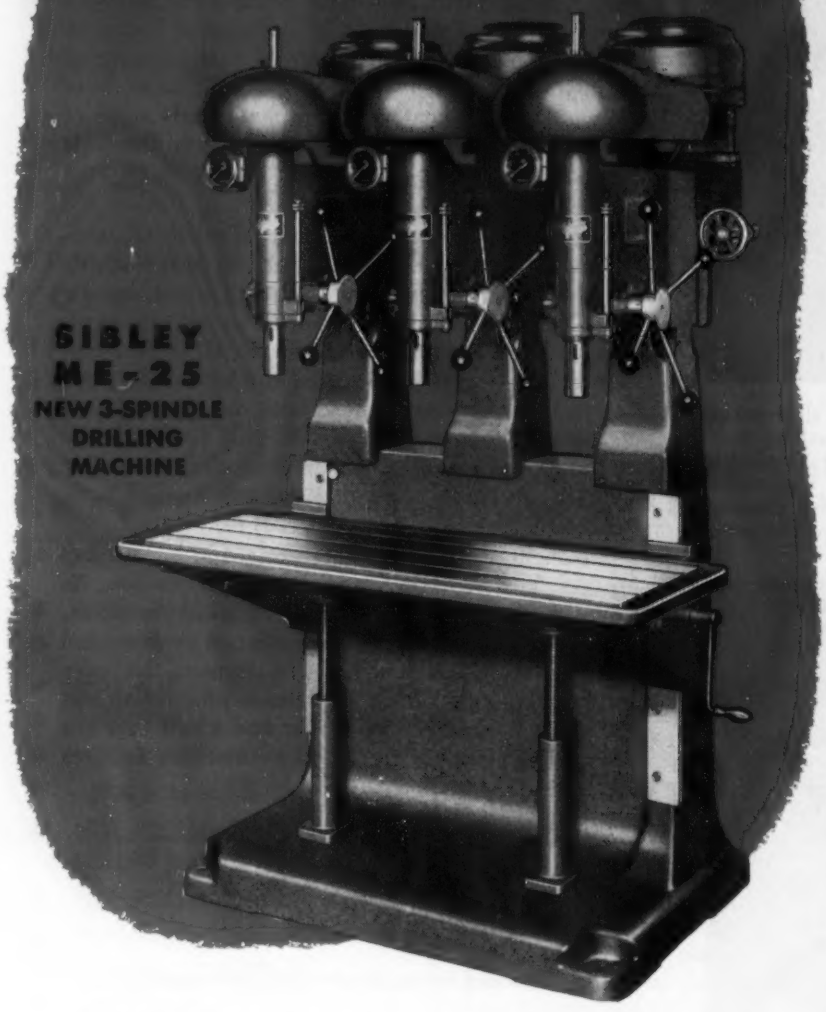

Work-handling consumes more time than work-cutting in producing many jobs. Reducing manual effort by one-half may increase production more than by faster cutting speeds. To make this improvement without burdening the operator —in fact to make it easier for him—is the chief advantage of the new Sibley Model ME-25.

The variable speed drive, the big 21½" swing, the extra large table, the convenient speed controls, the handy tachometers, all combine to make this 1" capacity, medium weight machine a production advantage in any shop!

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Personnel

Continued

Robert F. Marsh, appointed assistant manager, Chicago branch, INLAND STEEL PRODUCTS CO.; **Robert H. Ladewig,** named assistant manager, Detroit branch; **Frank D. Barclay,** made sales representative, Chicago branch; and **Jerome N. Roberts,** becomes sales representative, Los Angeles district office.

Tjark F. Riddle, appointed aircraft plant manager, Willow Run, Mich., KAISER-FRAZER CORP.; and **Sydney W. Taylor,** appointed assistant general manager.

James F. Charf, appointed assistant factory manager, Aeroproducts Div., GENERAL MOTORS CORP., Dayton.

L. F. Hansen, named director of industrial relations, NATIONAL METAL TRADES ASSN., Chicago.

Theodore B. Manheim, appointed to sales staff, Philadelphia and Delaware territory, DEARBORN CHEMICAL CO.

Clinton L. Whittemore, Jr., appointed special representative, Administrative Staff, OLIN INDUSTRIES, INC., East Alton, Ill.

OBITUARIES

Edward Ehlers, 76, founder and former head of Rockaway Rolling Mills, at Montclair, N. J., after a year's illness.

George M. Benkert, 80, president of Fairmount Foundry, Inc., recently. He was known as dean of Eastern Pennsylvania foundrymen and had worked as one all his life.

Joseph Motherwell, 79, retired president and chairman of the board of the Allston Valve Co., Cambridge, recently.

Paul B. Greenawald, 58, vice-president in charge of production and a director of The Carpenter Steel Co., Reading, Pa.

Ralph M. Frank, 61, chief clerk, Central Alloy District, Republic Steel Corp., at Aultmann Hospital in Canton, Ohio, after a two-month illness.

Joseph Carcione, 47, purchasing agent, East Car & Construction Co., at Maniwaki, Quebec, Canada.

How Weirton Steel Guards Against Fire

Extensive use of built-in fire fighting systems is teamed with portable extinguishers and two fire departments to keep fire damage and downtime at a minimum. One key factor in the plant's protection program is special classes to train some 300 men a year in use of fire extinguishers. Another is daily inspection by the plant fire department of all built-in and portable equipment plus checks on all potential hazards. Special precautions are taken before welding is done in the plant.

By E. T. Davis
Fire Inspector
Weirton Steel Co.
Weirton, W. Va.

Weirton Steel's Weirton plant has what may well be the most extensive built-in fire extinguishing equipment in the steel industry. With it there is a comprehensive fire protection program in the plant. The equipment protects almost everything from benzol storage tanks to sub-station electrical junction boxes. The five-way protection includes teaching 300 maintenance men each year how to use portable fire equipment.

The overall plan breaks down into five sections: (1) Keep all production equipment operating at peak efficiency. This is the job of the maintenance and electrical departments. (2) Promote good housekeeping; eliminate conditions that could create fire hazards. (3) Put built-in extinguishing equipment on any major piece of operating machinery which contains a fire hazard. (4) Locate fire fighting equipment at convenient and strategic locations throughout the plant. The fifth is education of employees in fire fighting.

In portable equipment Weirton now uses more carbon dioxide units than anything else but is beginning to buy dry chemical units in substantial quantities. Other portable units include soda-acid, foam and carbon tetrachloride types.

Standard color bands — originally designed for immigrant labor—are still used on all portable extinguishers. Eight-inch bands are painted on the units; red for water types, yellow for foam, white for carbon dioxide, blue for dry chemical. "How to Use" and on "What Kind of Fire" labels also appear on each unit.

To get the right extinguisher to the right place in time Weirton puts about 300 employees a year through a course to give them knowledge of and confidence in all the extinguishing equipment in the plant. Each class (two 1-hr periods) contains about a dozen men drawn mainly from laborers and the maintenance and electrical departments.

The first period starts by exhibiting sections of every portable extinguisher in the plant. The operation of each unit is explained and demonstrated. The three different classes of fire are outlined and the use of the proper extinguishing agent on each is stressed. The use of fire hose is also detailed.

Then small Class A, B, and C fires are lit and put out with the proper extinguishers by company firemen to show the efficiency of the equipment in attacking each type of blaze.

During the second period the class members use all of the portable equipment. Class A, B, and C fires are set and the members extinguish them under supervision.

Direction of all fire-fighting training and maintenance of equipment is centered in the Weirton Steel Fire Dept. The force has seven men, in addition to the author and his assistant.

Five of these men walk a daily inspection route. They check and recharge all fire extinguishers (except carbon dioxide) along their routes and are constantly alert for hazardous conditions which may have developed since the previous day.

These men are also responsible for maintenance of water sprinklers in their areas, and they test and wash all fire hose. Finally, they

Secondary alarms sound only in the buildings concerned, alert trained men there . . .

check all built-in carbon dioxide and foam fire extinguishing systems.

Weirton recharges about two hundred extinguishers a month with carbon dioxide units accounting for about 65 pct of the total. This does not mean that two hundred extinguishers a month are expended, as many portables must be recharged periodically whether expended or not.

The primary fire alarm system at the plant comprises 20 Gamewell fire boxes. When any box is pulled, the location-coded signal is automatically registered at the company fire department and also at municipal fire headquarters. The company department immediately responds and the municipal department dispatches two trucks to the scene.

Secondary, self contained fire alarms are installed in all primary buildings or mills. If actuated they sound only in the building concerned and alert only the fire trained maintenance personnel in that structure.

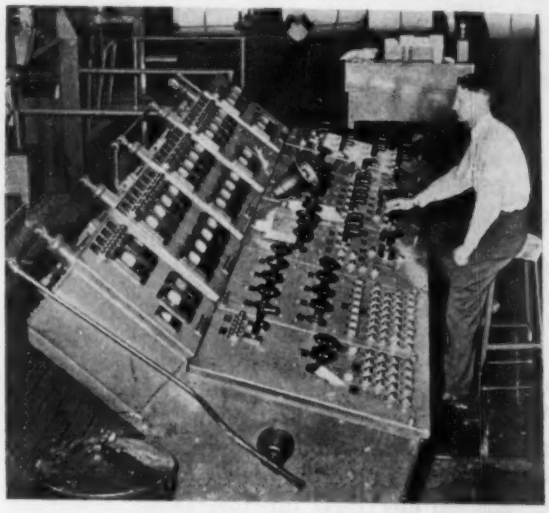
This may seem strange until it is realized that annually there are numerous small fires throughout the plant. They are extinguished immediately by men on the spot with portable equipment. It would be decidedly uneconomic to have the city or company department respond to each of these insignificant blazes that are put out long before either of the organized groups could get there.

If the fire is beyond the capabilities of the local maintenance crew, the Gamewell box can be pulled.

The dual alarm system is highly efficient and results in little, if any, loss of time if the company or municipal departments are needed.

The Weirton Steel Fire Dept. works closely with the town of Weirton Fire Dept. As has already been explained, the city department responds to any company Gamewell fire alarm. Similarly, if a city box is pulled, the alarm is transmitted to the company fire department and at least two company men respond.

Many of the men who received fire fighting training at Weirton Steel are members of volunteer departments in neighboring towns. Largely as a result of these associations, plans have been worked out so that in an extreme emer-



CONTROL PANEL at finishing end of an electrolytic tinning line is protected by automatic carbon dioxide system, as is every other board in the plant. Six gas nozzles leading into various sections of the control board are visible here.

PERSONNEL training plays an important part in Weirton's fire protection program. Here, above the hose house just outside the openhearth shop, a sign warns of the hazard of fire.

gency, municipal fire-fighting trucks and equipment from the neighboring towns would be available for company use.

The company has two wheeled 500-gal pumpers available for use within the plant or by the city. These are complemented by a wheeled generator unit, equipped with floodlights. The trucks generates 110 v ac which can be used by Weirton City Hospital in case of public power failure.

Where water sprinkler systems can provide efficient fire protection for any part of the plant, they have been installed.

Two independent networks of fire hydrants are available. The first system draws off the municipal water mains at 90-100 psi.

The second system is company-maintained and is pumped directly from the Ohio River which flows past the works. These hydrants have a maintained pressure of 40-60 psi. If needed, electric pumps with two independent power sources boost their main pressure to 200 psi.

Hose houses are adjacent to hydrants. There hose equipped with straight stream and/or fog nozzles is laid and available for quick coupling to either of the hydrant systems. Interior standpipes follow the same pattern as the exterior hydrants. All hose nozzles near electrical equipment are fixed for delivery of fog only to keep a man from turning a straight stream of water on an electrical fire.

Each machine vital to the flow of material at Weirton which contains a fire hazard is protected by a built-in carbon dioxide fire extinguishing system, usually automatic. This means that any blaze starting in such equipment will be detected and extinguished automatically before any substantial damage can be done.

Extinguishing equipment in the strip and tin mills cover four types of hazards: Lubricating and hydraulic oil cellars, switchboards or pulpits and finally, primary terminal boxes and tunnels. At the tin mill alone this protection covers 14 lube oil and 12 hydraulic oil cellars, two 150-ft wire tunnels, two wire terminal boxes and six electrical machinery control boards.

These systems were designed and installed by Walter Kidde & Co., Belleville, N. J. Each has temperature-rate-of-rise detectors mounted throughout the hazard space. Whether the hazard is in a remote, unattended location or in a busy sector of the plant, sharply rising temperatures, as caused by fire, act on the detectors to trip carbon dioxide storage cylinders. The discharge is sufficient to reduce the amount of oxygen in the area to a point which will not support combustion. The fire is smothered in seconds.

A valuable feature of carbon dioxide is that

FIREMAN tests, recharges and weighs one of some 130 portable carbon dioxide units serviced every month in the plant. The tank in the background holds 3 tons of liquid carbon dioxide.

Weirton has developed a special powder to spread on oily floors before welding in the plant . . .

being inert, it cannot harm machinery or electrical equipment and leaves no mess to clean up following a fire.

Each of these systems has refinements pertinent to the hazard protected. Some have pressure operated switches which automatically turn off ventilation in the hazard area and/or stop machinery. Others have pressure-operated sirens which sound both inside and outside the protected area when the system is actuated.

In some cases, cylinder release time-delays working in conjunction with audible signals give personnel within the space of thirty seconds "vacate-the-space" warning prior to the discharge of inert gas.

Every system has one or more auxiliary, manual release pull boxes installed at strategic locations. Further, some kind of visual or audible signal is registered in a major production control area if any system is actuated. The signal also designates which system it was.

The plant's foam systems were also designed by Walter Kidde engineers. The largest protects the coke plant tank farm which has eleven vertical tanks of 70,000-gal capacity each, and fourteen 20,000-gal horizontal tanks. This farm, with a total capacity of over a million gallons stores benzol, toluol, zylol, straw oil, fuel oil, and wash oil.

Any one of the large vertical tanks can be foam-flooded internally from the top while the dikes and trenches subdividing the small horizontal tanks can be flooded. In addition, hydrants and hoses are available for manual application of foam. The tank farm system is controlled from a small brick pump house about 300 ft away. The building contains electric pumps supplied by two independent power sources, both city and company water mains, connection and valves, and a 550-gal foam storage tank.

Operation of the foam system is as simple as throwing an electrical switch and opening the appropriate, clearly marked valves. The sequence is outlined in ABC language on a conspicuous wall chart.

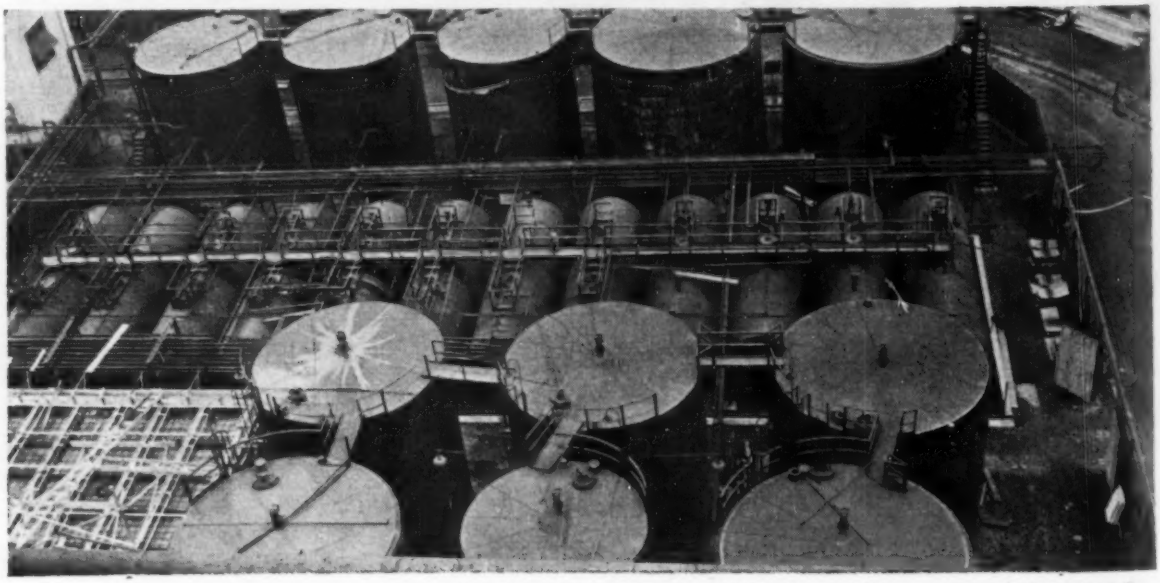
Foam systems also protect three 11,500-gal palm oil storage tanks, five 1,000,000-gal Bunker C oil tanks, three 1,000,000-gal tar tanks and all diesel fuel oil tanks.

Fire fighters eye welding

It is mandatory at Weirton to have a member of the fire department present when welding. The supervising fireman is charged with seeing that every fire safeguard is taken. First aid portable fire extinguishing equipment is brought to the scene and a rigorous inspection made following the operation.

Weirton has also developed a coarse powder (40 pct Kidde dry chemical powder, 60 pct soda) which is scattered over oily floors before welding begins. This has been highly effective in stopping blazes caused by sparks hitting the oil or grease.

As a result of training, plant personnel know fire fighting techniques and have faith in their extinguishing equipment. They act promptly to extinguish periodic small fires without property damage or loss of time. Three of the fixed systems have already acted automatically to extinguish the fire before any significant damage was done. Downtime was minimized.



TANK FARM with a total capacity of more than 1,000,000 gal is protected by foam which can be applied to top of any vertical tank. Foam can also flood dikes between the horizonal cylinders.

New wire rope gives better service

Wire lines that rig the cranes handling hot metal in steel mills must be exceptionally rugged. They are exposed to the intense heat of molten steel and at the same time are responsible for the safety of a highly valuable and potentially dangerous load. These cables are probably the most expensive ones in a steel mill, so the length of time they can be kept in service is important both from the standpoint of safety and economy.

In the past 1 year was about all that could be expected from the ropes on ladle cranes. This was based on the use of 6x19 and 6x37 round strand rope with either fiber or independent wire rope cores. Accurate service records of a number of leading steel mills, however, have proven that flattened strand wire rope lasts longer on this important and difficult application.

One large mid-western mill, for instance, has used it exclusively since 1945. The first rope, of course, was very carefully inspected throughout its life and especially after it had passed its second anniversary. At the end of 4 full years it still looked good, but was replaced on general principles. After handling more than 1,800,000 tons of steel, exclusive of the weight of ladle, hooks, etc., in over 12,000 heats, it was found that wear had been only 3/64 in. and that the breaking strength was still higher than the original catalog rating.

Another mill reported that they increased wire rope service on hot ladle cranes by 2 to 3 times with the use of Hercules Flattened Strand Wire Rope. Other mills have had similar experiences.

Round strand ropes are usually discarded simply because the cross-sectional area has been reduced beyond the safety point. Once outer wires have lost about 36 pct of their diameter through wear and corrosion, they become more readily displaced and subsequently broken as a result of reverse bending and general punishment. In round strand rope the crown wire of each strand receives the greatest wear since at first it alone can touch the sheaves. By the time the adjacent wires can assume a part of the wear the crown wire may already be dangerously worn.

Each of the strands in Flattened Strand rope is keystone-shaped in cross-section, see (photo.). This makes possible a number of important results: (1), it presents 4 wires per strand to the sheave groove for wear instead of one. This permits longer and more even wear; (2), the strands rest snugly against each other into a pattern that better resists crushing. There is less chance for the strands to cut each other, and less internal friction; (3), the compact pattern of strands permits a smaller core. Flattened Strand, therefore, contains about 10 pct more metal and is consequently 10 pct stronger and safer than any round strand wire rope of the same diameter; (4), the relatively smooth circumference prevents corrugating of the sheave groove. The range of sizes used on hot metal cranes is from ⅞ inch to 1¼ inch.

The triangular shaped wire in the center of the strand replaces the former round section permitting more compact strands, with less internal friction.

An adventure in materials handling—

By W. C. Hoppe
Product Engineer
Tubular Division
A. O. Smith Corp.
Milwaukee, Wisconsin

PRODUCING LARGE-DIAMETER PIPE TO EXACTING SPECIFICATIONS

Efficient materials handling facilities are a must in making 8⅝ to 36-in. diam line pipe in 40-ft lengths at the rate of 90 to 100 pieces per hr. The processing of more than 50,000 tons of steel per month requires fast operating tools and dies, and simple, efficient equipment for manufacturing, testing, finishing, loading and shipping. Every step from mill to consumer is safeguarded by rigid quality control to avoid defects and to obtain uniformity in diameter, length, roundness and edge alignment for easy fitup and welding in the field. Advanced techniques are used throughout without sacrificing the production rate, quality or precision.

PRODUCTION of 8⅝ to 36-in. diam pipe in 40-ft lengths requires efficient material handling facilities for the constant movement of 90 to 100 pieces per hr. Steel plates are processed at the rate of more than 50,000 tons per month. Fast operating tools and dies for forming the plate into pipe, and handling, testing and finishing equipment were developed to simplify production. All planning was directed toward rapid, economical handling, and maintaining a minimum of change-over time.

Rigid quality control of materials and processes is highly essential for obtaining uniformity and avoiding flaws in line pipe. Before the plates leave the mill, inspectors check mill practices and verify ladle analyses. This same caution is exercised in manufacturing methods where extremely close tolerances are followed and carefully checked. Quality and precision are further safeguarded by special loading and shipping procedures worked out for each size of pipe. Absence of defects in the finished product is uppermost at every step from mill to consumer.

The first major step in the manufacturing process is trimming the plate edges in prepara-

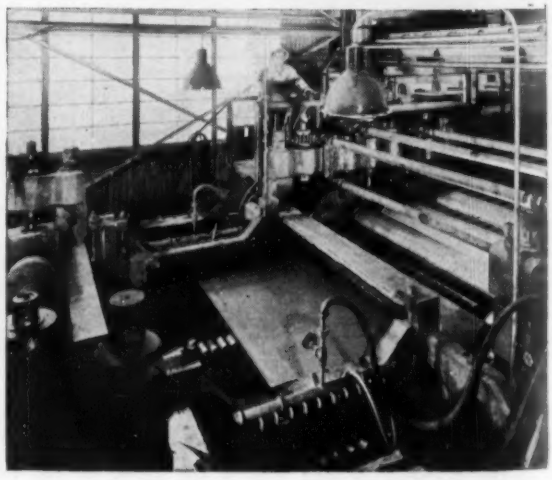


FIG. 1—Edge-trimming and flattening operations.

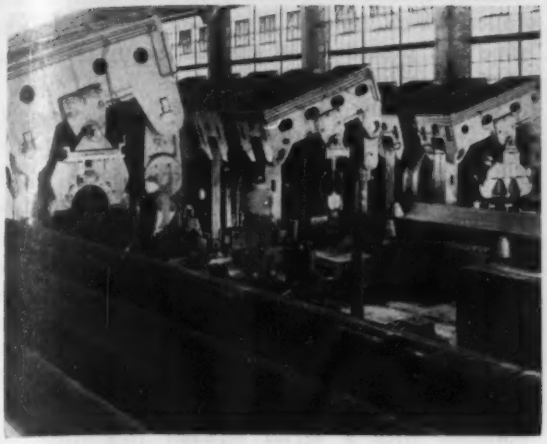


FIG. 2—Three operations form the plate into 40-ft tubes using presses from 3000 to 11,000-ton capacity.

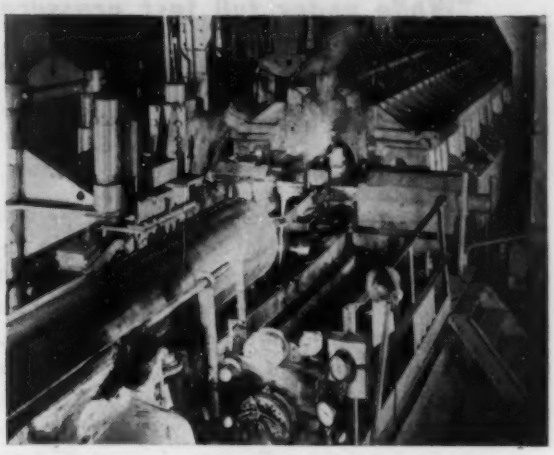


FIG. 3—One of the million-ampere capacity machines for simultaneous flash resistance welding a 40-ft seam.

tion for welding. Both longitudinal plate edges are trimmed to correct width and prescribed bevel for welding. In this same operation plates are passed through rollers and flattened to assure uniformity of pipe dimensions in subsequent operations, Fig. 1. Edge-trimming tools are made of high speed steel rather than carbide alloy to minimize breakage of the cutting edges when the plate is stopped to allow for clearing of subsequent operating stations.

Press capacities range to 11,000 tons

Forming of the pipe is done in three progressive press operations. First, plate edges are crimped to a shallow U shape as may be seen on the far press in Fig. 2. The second press forms the U into a pear shape and the third operation forms a cylinder with sufficient set in the steel to keep it round for the flash welding operation. A set of dies for each operation, 40 ft long when assembled, is required for each diameter from 8⅝ to 36 in. The presses have capacities ranging from 3000 to 11,000 tons.

A manufacturing highlight is the flash resistance welding operation. The full 40-ft length of pipe is welded simultaneously without addition of filler metal. A current of sufficient voltage and amperage is passed between the lightly touching edges of the formed plate. A flashing expulsion of metal occurs and heats the edges to a semi-fluid state or fusion point. When uniform heat is reached along the edges, the machine presses the edges together to complete the weld, Fig. 3. The result is a clean, sound weld as strong and permanent as the plate itself.

After welding, the pipe is conveyed to a trimming machine where the extruded flash is removed from the inside and outside simultaneously. A series of single-point tools take successive cuts as the tool carrier moves along the pipe, Fig. 4. The trimming machine is pictured in Fig. 5.

The next operation is rough end facing in which the pipe ends are trued and prepared for subsequent production tests. For this operation, high speed steel tools are ground to produce a curled chip of about 2½-in. diam and 3/32-in. thickness. The rate of speed for rough endfacing is about 64 fpm.

The internal expansion of line pipe produces several desirable results. First, it provides a positive test far more severe than that encountered under any condition in normal service. A second result is the increase in circumferential yield strength obtained by stretching the pipe as shown by the curves in Fig. 6. This increase in yield strength permits use of higher operating pressures than those permissible for pipe in the as-rolled condition. Steel plate in the as-rolled condition has a yield strength of about 44,000 psi compared to a minimum of 52,000 psi for expanded pipe.

Yield strength must be controlled to maintain ductility requirements. Since cold bending in the field must be done at intervals to follow the terrain, it is necessary that the minimum ductility meet bending requirements. Consequently, a yield point too close to the ultimate strength must be avoided. Another major benefit of expanded pipe is the uniformity of physical dimensions. Accuracy in straightness, roundness, and size stem from the precision dies used in the expanding process.

The importance of using expanded line pipe

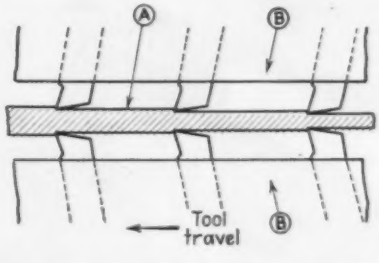


FIG. 4—Schematic view of flash trimming operation: (A) cross-sectional weld area of pipe; (B) tool carrier.

"While under full test pressure, repeated blows are struck directly on the weld . . ."

with increased yield strength takes on greater significance under practical circumstances. A 26-in. diam expanded pipe having a yield point of 52,000 psi and operating at a pressure of 700 psi will have to be 0.250 in. thick. Under identical operating conditions, an as-rolled pipe having a yield point of 44,000 psi will have to be 0.288 in. thick. The 0.038-in. difference in thickness amounts to a weight difference of about 27 tons per mile or about 13,500 tons in a 500-mile pipe line. Assuming a pipe cost of $120 per ton, a saving of over $1½ million would be realized.

During the expansion process, the pipe assumes accurate dimensions and is ready for the final end-facing operation. The two facing machines, one at each end, are aligned perfectly and the pipe is clamped tightly. There are two cutting tools on each machine, one to cut the bevel and the other to cut the flat on the lip. The cemented carbide beveling tool is guided by a roller which follows the inside contour of the pipe and provides the smooth, accurate beveled surface required for welding.

Quality control is stressed throughout, starting at the steel mill where a resident inspector checks the surface quality of the plate and rolling practice, and verifies physical and chemical tests on each heat of steel. During production, check inspection of dimensional setups is made at regular intervals on the various operations. At welding stations, inspectors check quality and weld dimensions. Visual inspection by experienced men is made of the entire weld of each length of pipe. The satisfactory pipes are stamped with a serial number indicating the welding machine, shift and pipe number.

The next step is hydrostatic testing for strength and resistance to shock at pressures producing a fiber stress equal to 80 to 90 pct of the minimum yield strength. While under full test pressure, repeated blows are struck directly on the weld by 6½-lb hammers placed at 2-ft intervals. The purpose of this test is to find defects which may not have been detected previously.

Following the hammer test, pressure is reduced

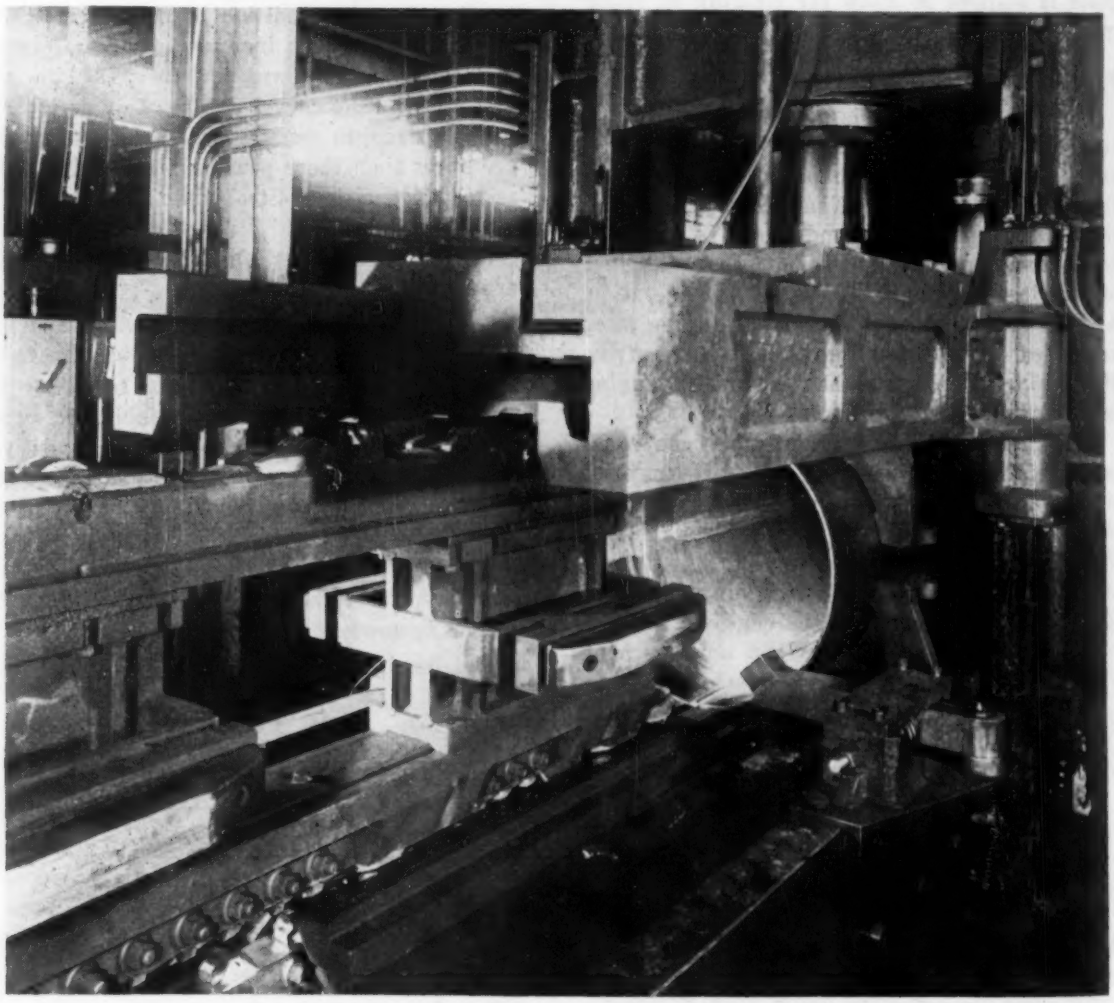


FIG. 5—Trimming machine where excess weld flash is removed from inside and outside simultaneously.

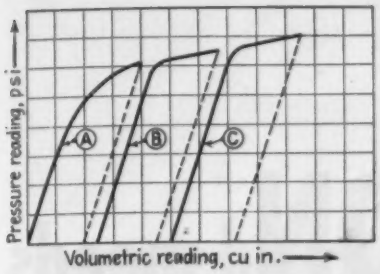


FIG. 6—Graphic increase in yield strength by controlled internal pressure applications: (A) typical curve produced on unexpanded pipe when pressure is applied to expand to size; (B) second pressure application on the same pipe in excess of previous pressure; (C) third pressure application higher than previously applied.

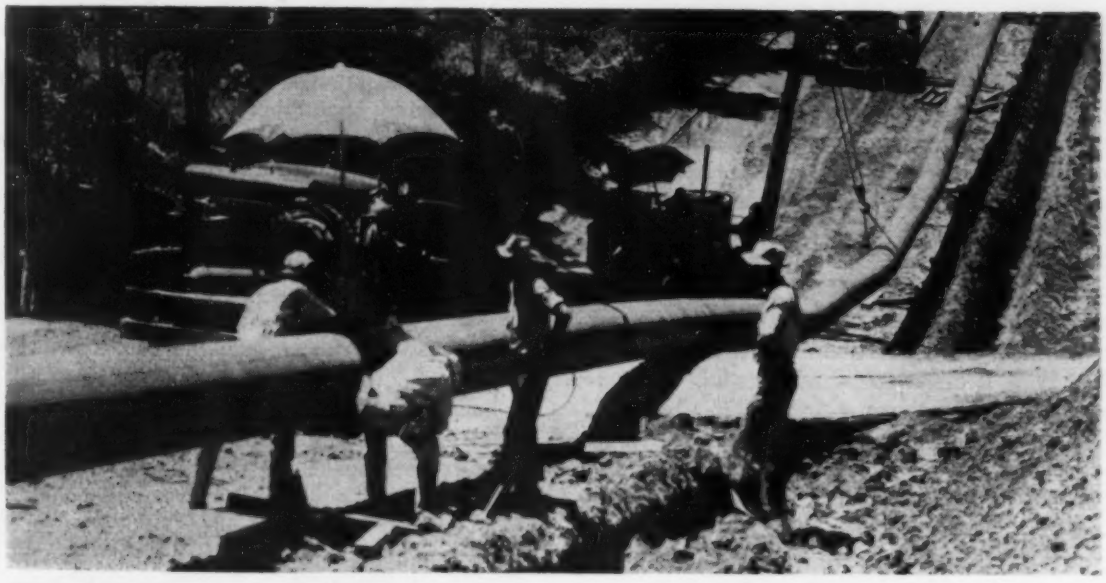
50 pct and an inspector examines the entire length for leakage before certifying to the soundness of the weld.

From the hydrostatic test, the pipe is conveyed to a preliminary inspection station where dimensions are checked. Ends are measured for size, contour, squareness and roundness. Wall thickness is checked with snap gages. Diameter and circumference are also checked to insure uniformity throughout the pipe length. Interior surfaces are examined to detect irregularities. After passing inspection, the pipe is measured for length and weighed, and the data noted on the pipe. During inspection, test coupons are cut at random from one of every 100 large-diameter pipe lengths and tested for physical properties and chemical analyses. Specimens are tested for ultimate strength, yield strength and ductility in both longitudinal and circumferential directions along with a tensile test of the longitudinal weld. Chemical analyses are made to insure good welding properties.

A conveyer then takes the pipe through a hot alkali solution to remove grease or dirt accumulated during manufacture. Size, length and weight are paint-stenciled on the pipe. The pipe is then given a final visual inspection. If specifications call for a priming coat, it is applied by automatic painting machines.

The aggressive application of research, engineering, tool design, metallurgy and production all contribute to the further development of a transportation system for natural gas and petroleum products. Its economic benefits have some effect on virtually everyone.

This is an extended abstract of a paper presented before the Production Engineering Div., ASME, Chicago, Sept. 8, 1952.



Pipe being welded to line section in operations where terrain problems are defeated by bending.

NEW BOOKS

"The Magnesium Symposium." A handbook on industrial application of magnesium alloys. Contains the report of a symposium held at the Army's Engineer Research and Development Laboratories (Fort Belvoir) in cooperation with the Magnesium Assn. PB 106 332. Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $2.00. 64 p.

"Practical Metallurgy for Engineers." Revised fifth edition presents the latest data on metallurgical practice. Included are new chapters on flame and induction heating. Heat treating practice for magnesium and copper have been added to bring the text up to date. E. F. Houghton & Co., 303 West Lehigh Ave., Philadelphia 33. $3.50. 599 p.

Manual handling a minimum—

AUTOMATION speeds fuel ta

By Herbert Chase
Consultant
Forest Hills, N. Y.

Fuel tank assembly operation is flexible enough to permit fabrication of different types of tanks on the same line with only minor adjustments in procedure. Maximum output of 5,000 tanks per 8-hr shift has been obtained. Major joints are seam welded two sides at a time. Welding time per piece has been considerably reduced. A minimum of manual handling is required throughout. Some hand soldering is necessary.

Assembly of five different types of fuel tanks going into all makes of Ford Motor Co. cars, trucks and tractors is performed in one large department at the Rouge plant. While processing of one tank alone requires an extensive fabrication setup, the problems involved are multiplied when a variety of tanks are made each differing from the other to some degree.

However, the assembly operation at Ford is flexible enough to permit fabrication of different types of tanks on the same or similar lines and still achieve a high rate of production. A maximum of 5,000 tanks per 8-hr shift has been obtained. Assembly methods for the different tanks are as identical as variations in size and design permit. All types consist of drawn terneplate halves with flat flanges extending from the perimeters. Flanges fit face to face and are joined by automatic seam welder. Except for size variations, differences occur mostly in filler necks, vents, fuel pipe fittings, drain plugs and fuel gage elements.

Major stampings are received stacked in steel skid units shown in foreground of Fig. 1. A battery of seven light presses is employed successively to perform such operations as piercing holes, clinching or riveting or spot welding fittings to both top and bottom. Some minor hand soldering of fittings is done near the end of this line. As the presses are close together, halves are passed by hand from operator to operator.

After these operations, the halves are passed through a washer to remove grease, flux and other foreign matter before being welded together. Welding is done along a conveyerized line in which the first machine is a spot welder shown in center of Fig. 2. The two halves are first locked in correct relative position and then joined by four spot welds to hold the halves in proper position for the seam welds that follow.

Seam welding differs from that in some plants in being of a straight line type. Four Resistance welders each make a straight seam weld along one side as the assembly is traversed between the two pairs of welder wheels. As shown in the background of Fig. 2, the machines are set in pairs with wheels so spaced that each makes a straight seam along each side flange. Wheels are axially adjusted and can be set for tanks of different widths.

Tanks feed automatically through the welders with usually only slight spacing between them thus making an almost continuous weld. Seams extend from end to end of side flanges. After this welding, tanks continue along the conveyer but before passing through the second pair of welders, Fig. 3, they are turned 90 deg so that the end flanges come in line with the second two sets of welder wheels.

Again, the end flange welds are straight and

THE AUTHOR—Mr. Chase, engineer, former trade magazine editor, and author of engineering texts, has been closely associated with industrial developments since 1910.

tank assembly and test

continuous and run from one end to the other. As a result these seam welds cross those previously made, at each corner of the tank.

This differs considerably from setups in which welders make one continuous seam that turns each corner along a radius. Since there are four separate seam welds per tank they form a continuous weld around the flange periphery because they cross at corners. Although welds are made two at a time, the total welding time per piece is half or less than half on machines making a single continuous peripheral weld.

These seam welds complete the body of each tank but it remains to fasten a filler neck in the hole pierced for this purpose and also perform some minor operations and test each tank. Filler necks prepared in advance are driven into the opening by hand in a fixture which holds the neck at the correct angle.

Since necks are sizable pieces and have to be brought to soldering temperature to produce the desired soldering joint, tanks with filler necks in position are placed by hand in a special conveyer, Fig. 4. The conveyer supports the tank on an angle but leaves the neck extending upward vertically in convenient position for soldering. The conveyer advances the neck between two rows of gas burners at such a rate that when the assembly reaches the soldering station, the neck will be hot enough to melt the solder.

Beside the loader, three men work at the heating and soldering machine. Two men apply flux around the joint and the other applies solder in wire form. Only two of these men are at the soldering station. Occasionally one has to use a hand torch to run the solder properly but gen-

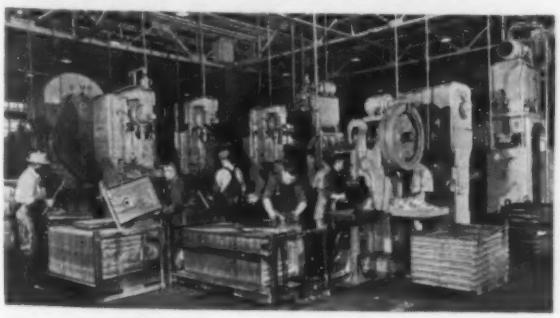


FIG. 1—Battery of seven presses handles hole piercing, clinching and other minor operations on drawn tank halves.

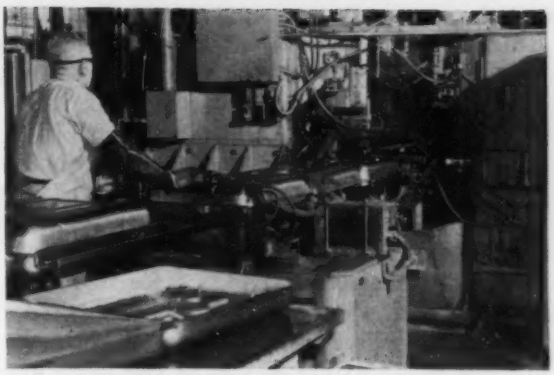


FIG. 2—Drawn halves locked together are tacked by spot welds before passing successively through two seam welders.

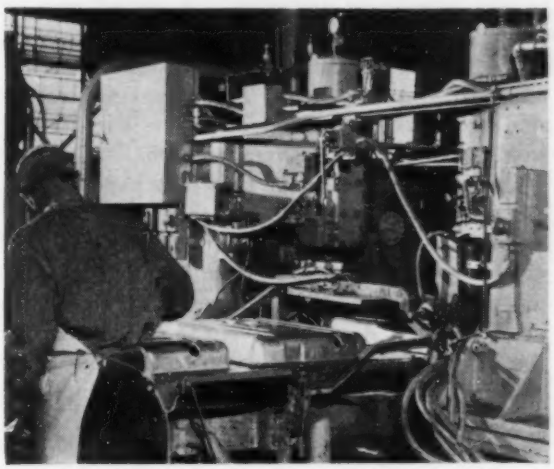


FIG. 3—After passing through first set of welders tanks are turned 90 deg for welding of the two end flanges.

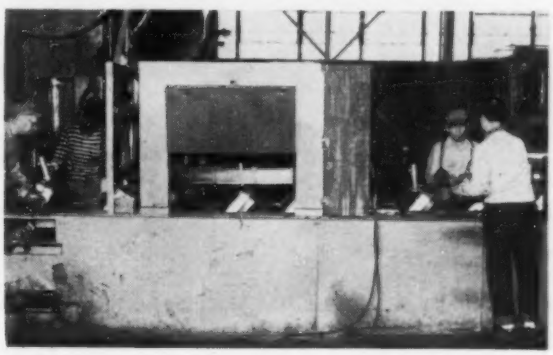


FIG. 4—Conveyerized setup in which inserted filler necks pass through gas jets for heating before soldering.

"Leakers are removed . . . after the leaks are repaired, usually by soldering . . ."

erally the filler pipe is hot enough to make extra heating unnecessary.

After soldering, the joint passes under a spray of air and water that cools the joint and hardens the solder. This leaves the tanks ready for testing except for addition of a vent tube fitting.

At the end of this assembly line tanks are picked up manually, one at a time, and set into a hinged fixture, shown in Fig. 5. This fixture has toggle clamps to hold the tank and seals that close each of the openings, including the neck. At the vent opening, a seal is connected by a flexible tube to an air cock that the loader opens as soon as the tank is in place. This cock admits air to fill the tank at 5 to 7 psi pressure.

All these fixtures are on an overhead chain conveyer that submerges each piece into a U-shaped tank of water. At the bend in this tank, Fig. 6, a tester rocks the tank about the trunnion supports of the fixture so that he can locate any leaks. If leaks are found their location is marked; if not the tank is passed. Leakers are removed and retested after the leaks are repaired, usually by soldering. A second man at the tank acts as an inspector and also turns off air before tanks emerge from the water and are unlocked and unloaded. Those passing inspection are placed on a belt conveyer, Fig. 7, and leakers are passed to a repair bench.

On the belt, any water that may have entered the tanks is pumped out and each tank is given a visual inspection, Fig. 8, to insure that all operations have been properly completed and to spot any flaws not previously discovered. Any such are repaired. A shipping cap is also applied as the belt carries the tanks toward a shipping area.

This assembly operation applies especially to Ford, Mercury and Lincoln passenger car tanks but may apply also to tanks for trucks and tractors that are similar in general construction. Some tanks as shown in Fig. 8, however, have only two parellel side seams, the other two being converging. In such cases, the parallel seams are made simultaneously but the other two must be made separately with the angle of advance set to suit. This calls for slight alterations in some procedures but they do not differ radically from those described. These are cared for either by temporary changes in the major setup or by providing alternative setups of generally similar character.

Fixtures used on the line for submerged testing fit all types of tanks made and the same final inspection belt handles all tanks.

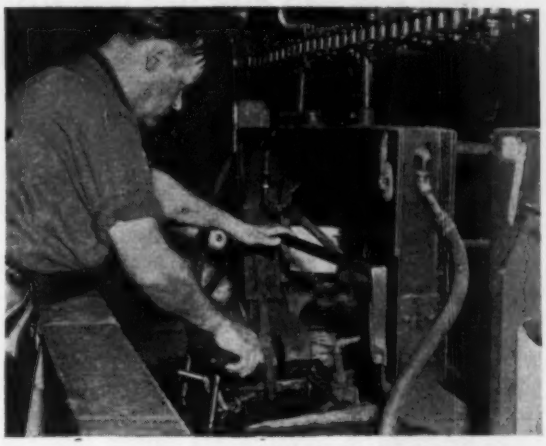


FIG. 6—Tester checks submerged tanks for leaks that are revealed by air bubbles. Any leaks are marked and leakers are sent to a bench where the leaks are repaired.

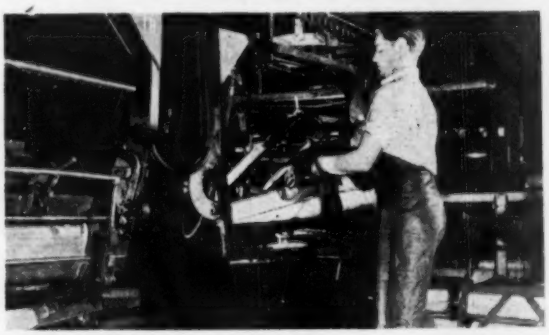


FIG. 7—Station at which tanks coming from immersion test are removed from fixtures. All tanks without leaks are placed on the belt conveyer and go to final inspection.

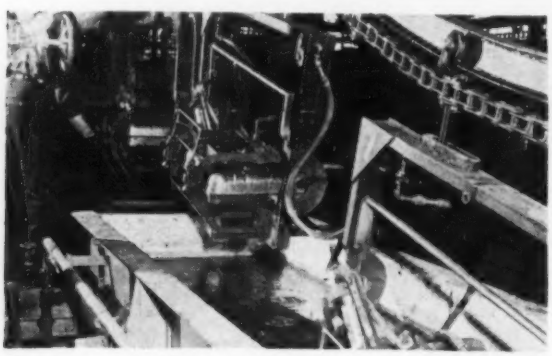


FIG. 5—Loading section of submersion test conveyer equipped with fixtures that hold the tank and seal neck and other openings to permit maintaining of air pressure.

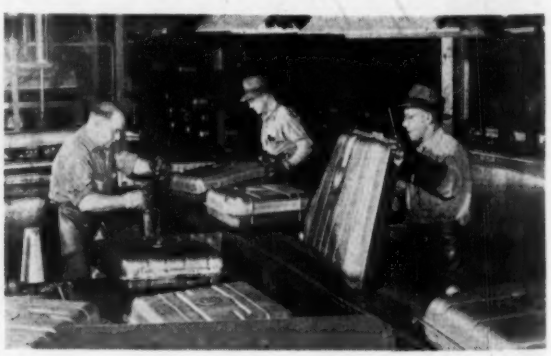


FIG. 8—Belt conveyer along which final inspection is made. Minor defects are repaired and shippings caps are applied. Tanks passed continue on belt to shipping area.

No hazards involved—

Sale of URANIUM CONTAMINATED STEEL SCRAP Recommended

By Hanson Blatz
Chief, Radiation Branch
Health and Safety Div.
New York Operations Office
U. S. Atomic Energy Commission

Release of uranium contaminated steel scrap to commercial scrap channels has been recommended by a division of the Atomic Energy Commission. A study conducted by the Health and Safety Div. of the New York Operations Office indicates use of the scrap will not affect personal health or the steel product made from the contaminated scrap. If sold through commercial channels, AEC will save money now spent in shipping contaminated steel to central points and benefit from sale of scrap.

For health and to avoid contamination of new materials, it has been standard practice for the Atomic Energy Commission not to release for salvage steel scrap or equipment contaminated with radioactive materials. The need to make available badly needed steel scrap held by AEC, plus the high costs involved in shipping scrap to a central point for special processing, led to a study by the Health and Safety Div., New York Operations Office, of the hazards involved in releasing uranium contaminated steel scrap through commercial scrap channels. Results indicate both health and technical hazards involved are negligible. On the basis of these results, the sale of uranium contaminated AEC steel scrap has recently been recommended.

As of May 1, 1951, an estimated 1000 gross tons of contaminated scrap steel was on hand at the Lake Ontario Ordnance Works. During one year 583 tons of scrap, largely steel, were shipped from St. Louis, Cleveland, and Canonsburg, Pa., to the LOON at a cost of $6904. Moreover, $2000 was lost by not selling the scrap. This represents only a fraction of the total contaminated scrap steel taken out of useful service each year by AEC.

To determine the effects of releasing contaminated steels which would be reworked into

"Could hardly be considered significant as either a health or industrial hazard . . . "

new steels, normal concentration of the contaminant in steels and the concentration beyond which such scrap steel could not be used were established.

To estimate normal uranium* content of steels eight samples of steel and one of cast iron, all produced prior to 1940, were obtained from the National Bureau of Standards. These were analyzed fluorometrically. From 14 samples an average of 0.06 microgram of uranium per gram of steel (range 0.01 to 0.2) was found and from a single sample of the cast iron 0.6 microgram of uranium per gram iron. Results are shown in Table I.

* All references are to natural uranium only.

Since any effect uranium contamination in steel could have depends upon the alpha or beta emission from the steel's surface, the relationship between surface emission and uranium content of steel was calculated. Estimated alpha emission was compaed with the measured values from steel having known uranium content, Fig. 1.

Sample steel melt tested

To measure resultant uranium content after contaminated steel was melted five samples of grossly contaminated steel were measured for surface and total contamination. Steel drillings were prepared for ether extraction of uranium. The residue, containing the uranium, was then measured fluorometrically[1]. Analysis of these laboratory results are given in Table II.

Original average contamination of the steel was 57.8 micrograms of uranium per gram of steel (standard deviation 32.0). After melting in an induction furnace, the melted steel was separated from the slag and the uranium contamination of the steel reduced by a factor of approximately 40 to a level of 1.5 micrograms per gram of steel. By throwing out one high sample suspected of containing slag this figure was reduced to 0.5 microgram uranium per gram of steel (standard deviation 0.59).

To verify these findings on a wider scale, about 500 lb of grossly contaminated steel were cut up and shipped to a steel mill. This steel represented the highest degree of uranium surface contamination found in operations. This was melted in an Ajax-Northrup 600-lb capacity high frequency induction furnace without a flux. Samples of this melt, Table III, contained 0.56 micrograms of uranium per gram of steel.

Slag in each case was found to contain a high concentration of uranium as expected. The semiplant run was considered more representative of industrial conditions. Average uranium concentration of the samples of produced steel was found to be less than 10 times that of the old steel samples. All of the scrap was either sheetmetal or shapes. No containers or pipes that might contain caked materials were used.

From the relationship shown in Fig. 1 (extrapolated) even slag with its relatively high uranium concentration could not present a health hazard and it would be highly improbable that any such material would reach an eventual destination where it could be technically objectionable. For example, the slag sample having the highest uranium content of 6.6 micrograms per gram of steel would emit 30 to 40 alpha particles and about 200 beta particles per sq cm of surface per minute.

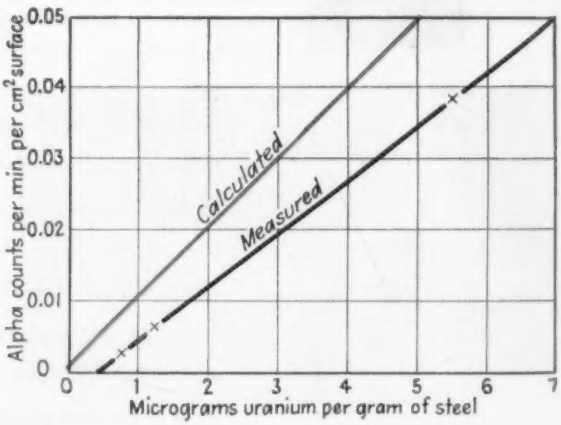


FIG. 1—Estimated alpha emission as compared with measured values from steel of known uranium content.

TABLE I

ANALYSIS OF UNCONTAMINATED STEELS

Sample	Uranium Micrograms per gram of steel
Basic Openhearth	0.06, 0.1
Basic Openhearth	0.05, z<0.01
Bessemer	<0.01, 0.02
Bessemer	0.04, 0.2
Acid Openhearth	0.02, 0.02
Acid Openhearth	0.07, ...
Lead-bearing Steel	0.07, 0.02
Cast Iron	0.6
W, Cr, V Steel	0.2, ...
Mean (Steel only)	0.0622

TABLE II LABORATORY MELT, CONTAMINATED SHEET STEEL

Sample	Alpha Count[1] Average-Each Side	U-Analysis[2] Before Melting	U-Analysis[2] After Melting	Alpha Count[3]
1	7, 14	117, 87	5.5	0.38
2	38, 9	92, 36	1.2	0.06
4	250, 65	71, 12.8	0.7	<0.05
5	6, 0.4	141, 13.6	0.1	<0.05
7	11, 20	1.6, 5.6	<0.1	<0.05
Mean	.....	57.8	1.50	.....
Mean (omitting sample 1)	.....	.....	0.47 (see note)	.....
Scale	.....	6700	.....	.....

[1] In units of 1000 c/m/100 cm².
[2] Micrograms U per gram steel.
[3] Counts per min.

Note: Sample 1 (after melting) was found to have small cavities in which there were inclusions of slag which could account for the highe uranium content.

TABLE III

SAMPLE STEEL MILL MELT

Sample	Uranium Micrograms per gram of steel
1	0.8
2	0.6
3	0.45
4	0.39
Mean	0.56
5 (slag)	18
6 (slag)	140

The steel industry generally uses about ¼ ton of purchased scrap for every ton of finished steel produced. The contaminated steel would thus be considerably diluted by other uncontaminated metal even in the event contaminated steel made up the entire scrap input of a plant.

The product of electric furnace operators who employ a 100 pct scrap feed would have less than ten times the normal uranium content of virgin steel even if all the feed were to be highly contaminated with uranium, as shown by our semi-plant run. This could hardly be considered significant as either a health or industrial hazard. By comparison, samples of widely used commercial fertilizers analyzed by the National Bureau of Standards showed an average uranium content of 55 micrograms per gram.

A radioautograph was made with a steel sample from the first run. Table I—Sample 1, the sample having the highest uranium content being selected. After a one week exposure in contact with a panchromatic photographic emulsion, no fogging could be observed. This sample gave a count of 0.38 per min for the whole area (10 sq cm) equal to about 0.5×10^4 alpha particles for the week. Webb[2] estimates about 10^5 beta particles per sq mm are needed to produce a pronounced darkening (density 0.3 to 0.6) on a fast X-ray or photographic film.

It would require a steel with a uranium content of 74 micrograms per gram, in contact with X-ray film, 6 mon to darken a film to the specified degree. This figure is more than 10 times the highest found and over 100 times the mean concentration in the steel produced from the semi-plant run. With additional normal scrap dilution in steelmaking no possible harmful effect on the photographic industry is foreseen.

In making Geiger-Muller tubes the background should be kept down to the order of 10 counts per minute. A 10 sq in. electrode should be kept below 0.015 counts per min per cm.[2] Counter electrodes are ordinarily made from tungsten or stainless steel. Since, for technical reasons, ordinary steel scrap is not used in the production of stainless steel, the G-M tube industry would not be affected.

In the case of high sensitivity ionization chambers, used for measuring radon background, a limit of about 10 counts per hr per 125 sq in. of surface should be met. This corresponds to 0.0002 counts per min per cm^2, which would be produced by a uranium content in steel of 0.03 microgram per gram of steel. This is below the uranium content of some of the samples of steel produced before 1940. Since it is already necessary in the instrument industry to avoid use of ordinary commercial steel for such low level applications, a slight increase in the uranium content of commercial steel cannot be expected to have any effect on this phase of the industry.

ONE TO FOUR is the ratio of purchased scrap used by the steel industry to turn out finished steel. Steel and foundry industries bought a whopping big 34,695,777 gross tons in 1951.

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(1) C. J. Rodden, Analytical Chemistry of the Manhattan Project, NNES, DIV. VIII, VOL. I.

(2) J. H. Webb, Fogging of Photographic Film by Radioactive Contaminants in Cardboard Packaging Materials. Physical Review, Vol. 76, No. 3, Aug. 1, 1949, pp. 375-380.

Need giant presses—

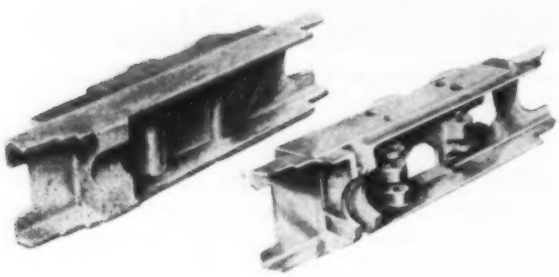
Large forgings will slash FABRICATION COSTS

Aircraft industry analyses show how much will be gained through availability of large forgings, such as the huge presses the Air Force is sponsoring can produce. They will permit weight reductions, reduction of assembly labor and equipment costs, reduced machining requirements, and greater structural strength. But there are problems to be solved, such as availability of large enough ingots and die blocks, suitable auxiliary equipment, and adequate supplies of skilled labor.

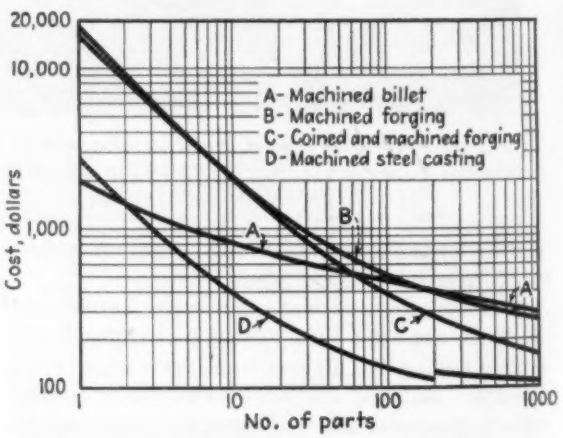
The aircraft industry looks forward with enthusiasm to benefits from the Air Force's heavy press program. But not without many reservations. This is the sum of reports made at a meeting on heavy presses called by the Aircraft Industries Assn., and attended by press builders, press users, military men, and forging producers.

Aircraft designers have many problems which the availability of larger forging capacity, if the Air Force program goes through as planned, will help solve. But, new problems will be created. Still, the anticipation is that the trend in aircraft design makes large forging presses essential, and that the new problems can be solved.

According to G. W. Papen, Lockheed Aircraft Corp., there are several trends in aircraft design which forecast large forgings. Reduction in the number of parts in a component or assembly is



AS FORGING, aircraft dive brake inboard mechanism fitting is made in one piece. Savings in weight and assembly costs over same part built up of many individual parts are large. Availability of larger forgings will permit making aircraft components of even fewer pieces. Rough forging left weighs 44 lb, finished part, right, weighs 13.5 lb.



COST COMPARISONS for typical aircraft part as made by machining from billet, machined from forging, machined from coined precision forging, and machined from casting. Though casting has cost advantage, strength and weight considerations favor making part from forgings.

being pushed because it reduces overhead, reduces weight, increases reliability, reduces or eliminates assembly time, and reduces or eliminates assembly tooling costs.

Weight reduction is gained through using fewer, larger parts in an assembly, by reduction of the amount of overlap and fasteners required. Weight reduction through use of large forgings will also come through use of higher allowable strength with better distribution of material.

In the case of integral fuel and oil tanks, and fuel-tight structures surrounding fuel cells and bags, the more parts used the more sealing manhours, materials, and weight are required. Larger forgings will reduce the amount of sealing needed. Also, use of larger forgings in place of built-up parts will contribute to aerodynamic smoothness of the aircraft through reduction of rivets, bolts, and spotwelds on the aircraft surface.

Ed. Note—This article reflects the views given by members of industry on the Air Force's heavy press program. It is intended to acquaint readers with the status of development in this field so far. The report will serve as a basis from which future discussions will be drawn at a meeting to be held Dec. 2 in New York. The meeting will be organized by four national technical societies as part of the next annual meeting of the ASME.

Considering some objections to large forgings, Mr. Papen said that lack of sources for really large forgings will be relieved by the heavy press program. The question of constantly changing designs, which leads some planemakers to avoid forgings, extrusions, and castings, has not proved troublesome to Lockheed. Tolerance problems need not be too much greater with larger forgings. Thinner webs, proportionately, must be obtained in the larger forgings. Draft angles can and must be reduced. Billets of necessary size for large forgings will be available. Forging time on large presses need not be excessive.

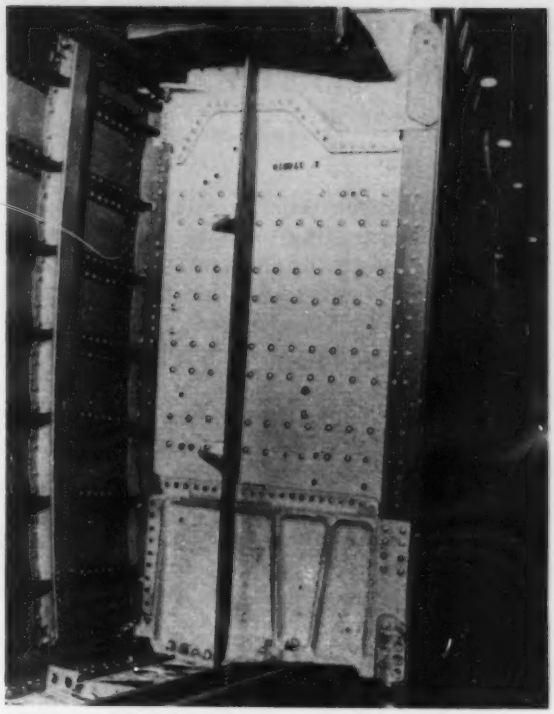
Trend toward larger, fewer parts

Mr. Papen concluded that the trend in aircraft design is definitely away from building up structures from small parts. Press forging can be one of the most economical cost and weight saving solutions to the manufacture of large, intricate aircraft parts.

Boeing's view of large forgings paralleled that of Lockheed. Mr. A. C. Carlson said increased structural loads on aircraft have increased component cross-sections. This means larger connecting joints must be made. Use of large forgings can correct this by eliminating many of the joints. This reduces weight.

There is also a reduction in cost and manpower if larger forgings are properly utilized, through reduction of jigs and manhours required for machining, spotfacing, drilling, bolting of connections between components of a structure.

Speaking for Northrop Aircraft, T. E. Piper emphasized savings in machining costs due to more precise forgings, which might be expected from heavier presses and improvements in design when these are built.



BEFORE. Fighter rib installation of more or less conventional construction. Forgings shown were largest available at the time this part was designed. Note the number of attachments both on the rib and skin structure.

Northrop's F-89 fighter uses a total of 342 light alloy forgings, which weigh 1523 lb rough and 760 lb after machining. The average operations of machine per forging is 12, taking about 4.4 hr per forging or 1509 hr per plane. At a conservative $5 an hr, a saving of only 25 pct in the required machining of forgings would save $1,885 per plane. For production of 500 planes, this saving would release nearly $1 million for improved tooling for forging manufacture, even were there no other cost savings.

Fig. 1 compares procurement costs of a typical part produced by four different methods, from data by Northrop's Producibility Engineering and Materials & Process Engineering Depts. The computations are based on the assumption that all parts, no matter what the process, would be available on time as required.

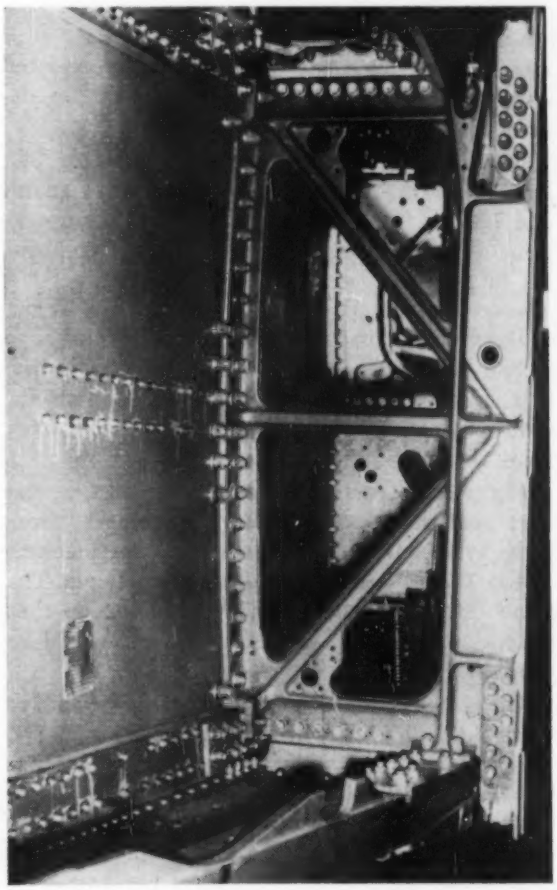
The conventional forging is less expensive than the billet machined part after 51 parts. Forged-to-size parts are cheaper than the machined billet after 68 parts, and cheaper than conventional forgings after 105 parts. The steel sand casting, even after machining, is cheaper than any. However, weight, structural requirements, and the difficulty of procuring aircraft quality castings tip the scales in favor of the forgings. Although lack of sufficient press capacity has been the primary reason for difficulties in utilizing

"Reserving the big presses for work only they can do will reduce costs . . ."

forgings, Northrop believes that there are also other problems tending to cause need for excessive machining of forgings. Among these are use of badly worn presses, insufficient number of operations in producing each forging, inadequate die design, high-cost starter dies, and die wear.

T. L. Fritzlen and J. B. English, speaking for Reynolds Metals Co., told the meeting that the availability of high quality billets large enough for the proposed large presses is not a foregone conclusion. Large billets can now be made, but not with the same quality guarantees that are made on billets of today's commercial size. The heavy press program must include development of means of producing satisfactory large forging billets.

A forging of aluminum will weigh 50 pct more than one from magnesium of comparable thickness, G. Ansel, Dow Chemical Co., told the group.



AFTER. Improved fighter rib illustrating forged rib replacing built up construction shown in other photo. Number of parts is considerably reduced. Note clean surface due to use of tailored sheet type skin construction.

Not all parts of a plane are subjected to maximum stress, and in these cases magnesium can be readily used. Furthermore, fatigue-wise the comparison of forged magnesium to the strong aluminum alloys, particularly in the presence of stress concentration, is more favorable than comparison of static strengths. Forgability of magnesium is at least as good as aluminum, and die design considerations are the same.

With the heavy presses must come sufficient and adequate supplementary equipment, warned G. A. Moudry, Harvey Machine Co. If cast billet stock is used, auxiliary presses are needed to obtain wrought properties. Reserving the big presses for work only they can do will reduce costs and accelerate production. Extrusion equipment for pre-forge operations is desirable. Trimming, heating, and straightening equipment for very large forgings is needed.

Large forgings simplify design

As an example of what forgings can do, W. De Groat of Republic Aviation, cited a forged F-84 stabilizer. The proposed stabilizer was designed to be made up of 8 pieces, later simplified to 5. This contrasts with a total of 547 pieces, not including fasteners, used in a conventionally designed and produced stabilizer.

Though most of these attending the meeting agreed that the most promising future was visible for press forged, not hammer forged parts, a word for hammers was spoken by V. F. Braun, Ladish Co. He described the two-way, or counterblow, hammer. One rated at 125,000 meter kilograms is being designed, which is expected to be equivalent to a 150,000-lb one-way hammer. Where large parts can be placed in a die and struck repeated blows without manipulation, this type of hammer has distinct advantages.

Some redesign due to press shortage

Concluding, A. H. Peterson, Lockheed, said the airframe industry has an immediate need for larger forging facilities. Several manufacturers have had to redesign due to a lack of these facilities, while others have restricted their design to types of construction more costly and time consuming.

It is recognized that there are a number of unknowns in the fields of ingot size, die blocks, and accuracies. None of these will present insurmountable problems.

"The airframe industry has an immediate need for larger forging facilities . . ."

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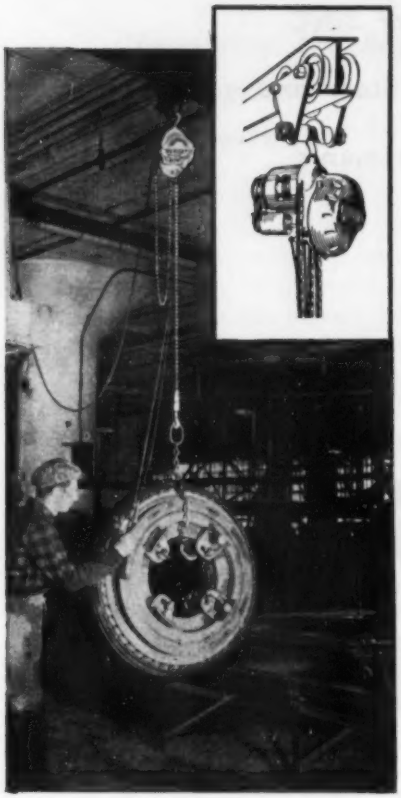

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Technical Briefs

INGOT BUGGY:

Fast handling, close control of ingots described.

A simplified automatic ingot buggy cable, driven by a drum centrally located below the buggy track will be described by I. N. Tull, Republic Steel Corp, at a meeting of the Assn. of Iron & Steel Engineers in Cleveland next week. Hugh S. Fegley, Westinghouse Electric Corp., cooperated in presenting the paper. Mr. Tull is current president of the AISE. The meeting will be held in conjunction with the 1952 Iron & Steel Exposition, Sept. 30 to Oct. 3.

The buggy receives the ingot from nine fixed location and delivers it to a receiving table at the track end. The ingot cradle engages a cam at the end of the receiving table and in the last few feet of travel, tips the cradle forward and deposits the ingots on the table rolls. Track and receiving table are in line so the buggy stalls against the end of the table for discharge of the ingot. The 30,000-lb buggy travels at a maximum speed of 1200 fpm.

Single Motor—A single 200-hp motor supplied from a 150-kw variable voltage generator, drives the cable drum. All movements of the buggy are controlled by the operator located near the receiving table.

Push buttons corresponding to the nine positions give him complete control. Selection may be changed at any time. A meter indicates the position of the buggy at all times.

Speed Control—A simple control governs the speed of the buggy eliminating overshooting, and insuring accurate stopping. The control uses a rheostat driven by the cable drum, connected in a bridge circuit.

POWER:

Pure boiler feedwater possible with mixed bed demineralization.

High pressure boiler feedwater with fewer impurities is provided by mixed bed demineralization, Martin E. Gilwood, Permutit Co., told members of the American Institute Chemical Engineers Society at Chicago last week.

A trend towards steam power plants which operate at higher and higher pressures and temperatures to attain better thermal efficiencies has been evident for several years.

Higher Pressures—Boilers and turbines operating at 1000 to 2400 psi and at temperatures up to 1000°F., have become more common.

At these high operating pressures, difficulties with scale, deposits and carryover in the steam are multiplied. Boiler make-up water containing a minimum of impurities is needed.

Mixed bed demineralizing produces water low in electrolyte and low in dissolved silica through ion exchange.

Improved operating efficiency and lower maintenance are indicated for the method.

CLEANING ALUMINUM?

An oft asked question is: What is the best material and method for cleaning aluminum surfaces that have become dirty from exposure to the atmosphere?

Scrub well with a cloth or brush using Lava soap, Reynolds Metals Co. suggests. Tests have shown this works well on all architectural applications where aluminum is exposed to city atmosphere. The entire United Nations building in New York is being cleaned with Lava soap.

To retain cleanliness for maximum period after washing, apply wax and polish with a dry cloth.

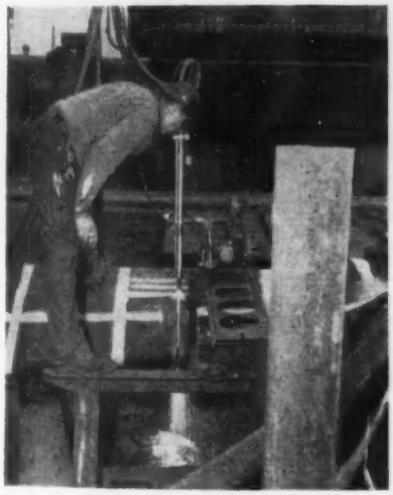
BLOWPIPE CUTTING:

Steel ship castings cropped faster using machine cutting.

Machine-cutting replaced hand-cutting for one operation in a Cleveland shipyard and slashed the time needed to prepare steel castings for welding by almost 88 pct, it is reported. Rough casting ends are now cropped and made ready for welding in 8 hr compared with the 66 hr required when hand-cutting was used.

A machine-cutting blowpipe mounted on a modified Oxweld CM-16 cutting machine does the actual work. Before this setup was installed, casting ends were cropped with a hand-operated oxy-acetylene blowpipe.

Faster—Cuts required considerable chipping and finish grinding before they were smooth enough to be welded. Hand-cutting also caused problems of operator fatigue due to the time and effort



CUTTING MACHINE, mounting a water-cooled oxy-acetylene blowpipe, is being used to crop end of large steel casting. Oxweld cutting machine runs on twin track section to assure straight cut.

needed to cut the heavy sections.

Machine-cutting does the job more rapidly, leaving smooth cuts which need little finish machining, and reduces operator fatigue and the delays which it causes. Four of these castings form the 40-ton stern frame of a large Great Lakes ship.

Turn to Page 136

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FOR POWER TRANSMISSION • REQUIRE NO MAINTENANCE

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Thomas Couplings have a wide range of speeds, horsepower and shaft sizes: ½ to 40,000 HP — 1 to 30,000 RPM.

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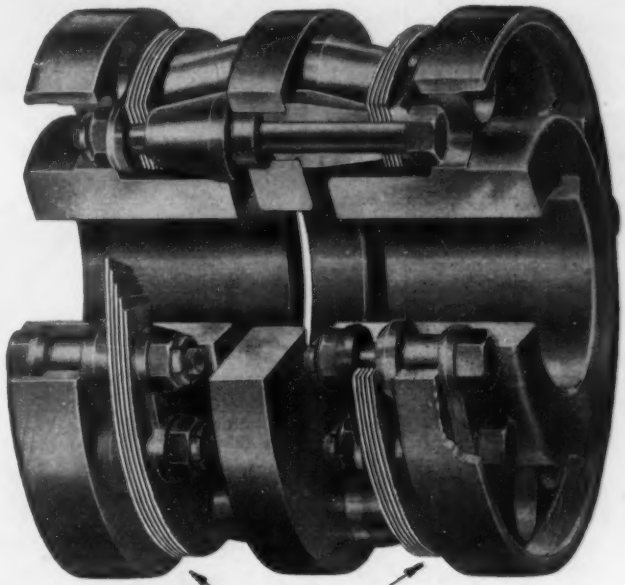

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✔ **ABSOLUTELY NOISELESS.** In one large steel mill, for example, over 1000 F.E.I. burners are in operation, yet you cannot hear noise from a single burner . . . So quiet that only by noticing position of stop cock handle, or by observing through inspection port, can you tell whether burners are on or off.

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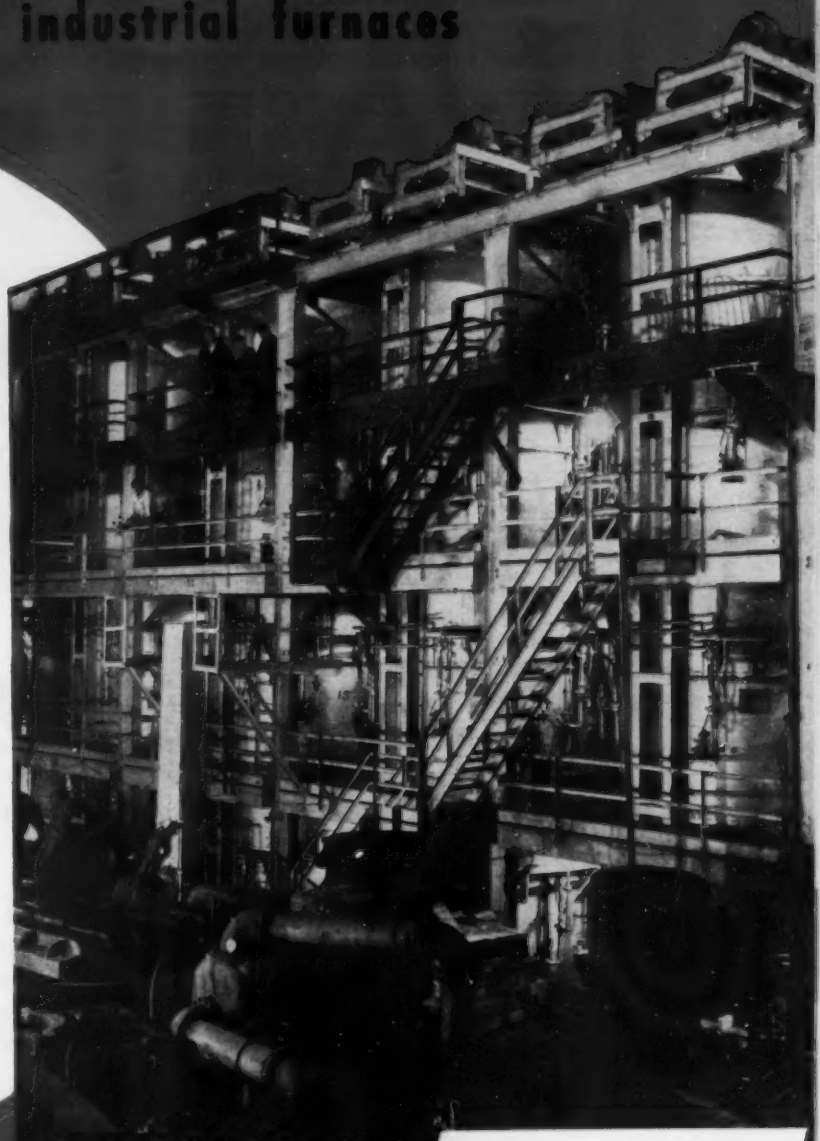

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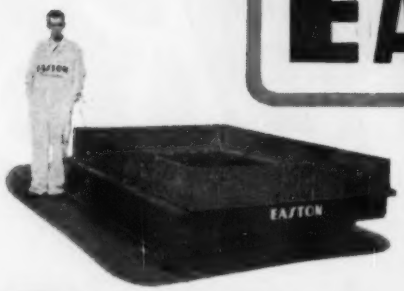

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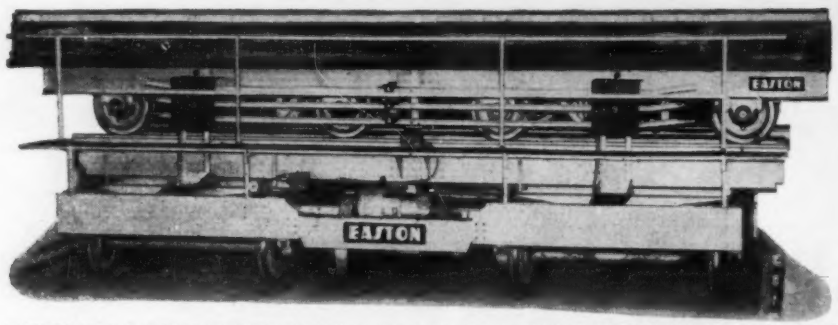

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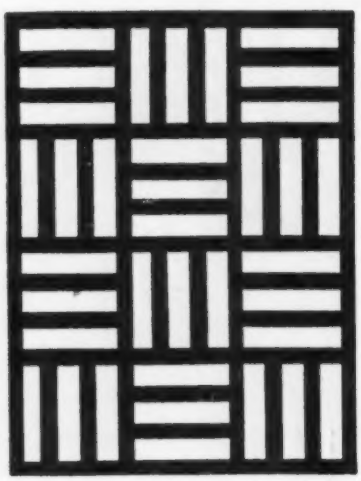

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—Technical Briefs—

GEAR LUBRICATION:

Radioactive tracers used to determine how lubrication works.

Characteristics of radioactive tracers which permit them to be used to track down causes of failure in metalworking problems, have been put to use in a study of The Effect of The Lubricant on Gear Performance. Results of the study by V. N. Borsoff and S. S. Sorem of Shell Development Co., Emeryville, Calif., will be presented at the meeting of the Assn. of Iron & Steel Engineers in Cleveland Sept. 30 to Oct. 3.

Main causes of gear failure under the continuing trend toward higher speeds and loads in gearing, fall in the classes: Tooth breakage, pitting, scoring, abrasion. Lubricating engineers have held two theories on gear lubrication.

(1) Gears can operate only in the boundary zone of lubrication in which part of the load is carried by thin chemically formed and absorbed film.

(2) Thick film lubrication is possible and desirable.

Thick Film—Earlier tests indicated that thick film lubrication existed, with straight mineral oils, up to the load and speed at which scoring occurred.

Scoring loads were established by observing the contacting teeth surfaces. Since it seemed possible that the previous visual observations failed to detect the thin film conditions, a new technique, involving radioactive tracers, was developed to determine the zone of lubrication in which a gear has operated.

Results confirmed the existence of a thick film fully separating the gears up to the conditions at which scoring takes place with straight mineral oils. With additive oils, lubrication is still by the thick film mechanism up to the limits for the base oil. Beyond these limits operation may be continued without scoring but chemical wear is encountered.

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COLOR DYNAMICS:

Higher production, better morale attributed to color dynamics.

Color dynamics—the scientific utilization of the energy in color—can promote operating efficiency and safety in industry as well as improve employee morale, Joseph K. Seyler, Jones & Laughlin Steel Corp., Pittsburgh, has stated in a paper to be delivered at a meeting of the Assn. of Iron & Steel Engineers in Cleveland next week.

Scientific use of color is based upon principles similar to camouflage, but diametrically opposite. To camouflage an object, color is used to mislead, hide, or obscure; in color dynamics, color is used to highlight, to reveal, to emphasize, and to utilize.

Objectives—Objectives of color dynamics are: (1) to promote continuity of employment, (2) to improve efficiency of operation, (3) to maintain quality of production.

Since color dynamics is concerned not only with the factory background of walls, floor and ceiling, but also with the machines, eye-strain and the resulting fatique are minimized, the workers themselves remain more alert and are better able to avoid hazards.

For the employee, color dynamics make his working day easier, contribute to his safety, and guard his health by eliminating eye fatigue, frequently the cause of nervous tension.

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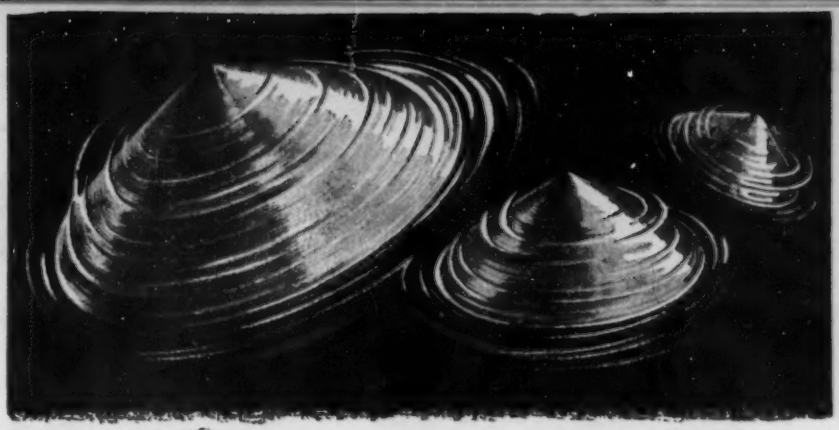

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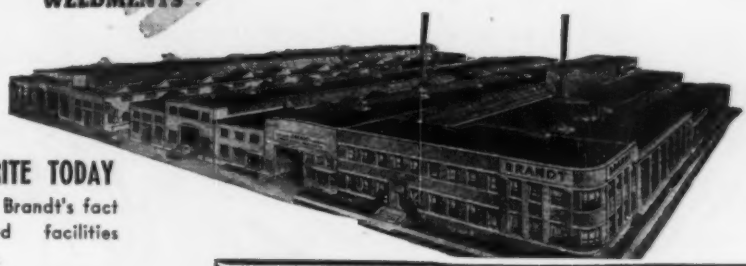

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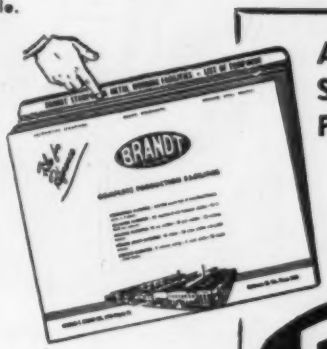

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Because *your* roll designers and mill operators have helped Mack-Hemp metallurgists in the development of our rolls, the rolls *with the striped red wabblers* turn in excellent production records.

For example, application of Mack-Hemp rolls in intermediate stands on high speed strip mills reduce costly down-time, because Mack-Hemp rolls stay in the mill longer without redressing.

Because we are working constantly to improve the rolls *with the striped red wabblers,* it's wise to keep your eye on what's new at Mack-Hemp.

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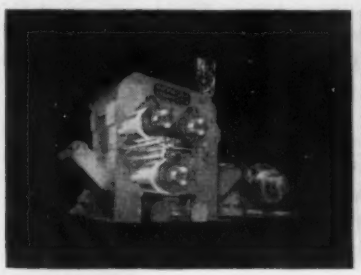

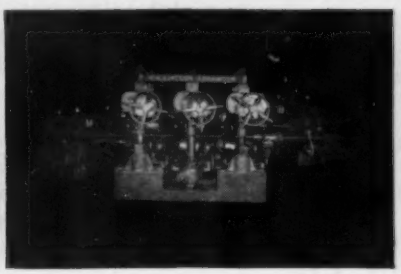

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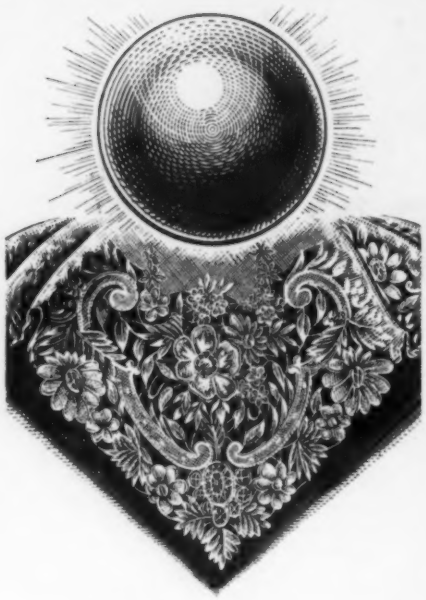
Johnston Patented Cinder Pots are designed to fit your plant requirements. From small units for electric furnace use to giant thimbles for blast furnace and open hearth, Johnston Cinder Pots provide dependable slag disposal service.

Because Mack-Hemp engineers keep pace with modern steel mill practice, it's wise to keep your eye on what's new at Mack-Hemp.



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METALS RESEARCH:

Japan embarks on new phase of low temperature studies.

Japanese engineers have moved a step forward in the field of low temperature metals research with installation of a Collins helium Cryostat at the Research Institute for Iron, Steel and Other Metals at the University of Tohuku.

Installed by the Arthur D. Little, Inc., industrial research and engineering firm, the unit makes possible low temperature research on metals at temperatures close to absolute zero.

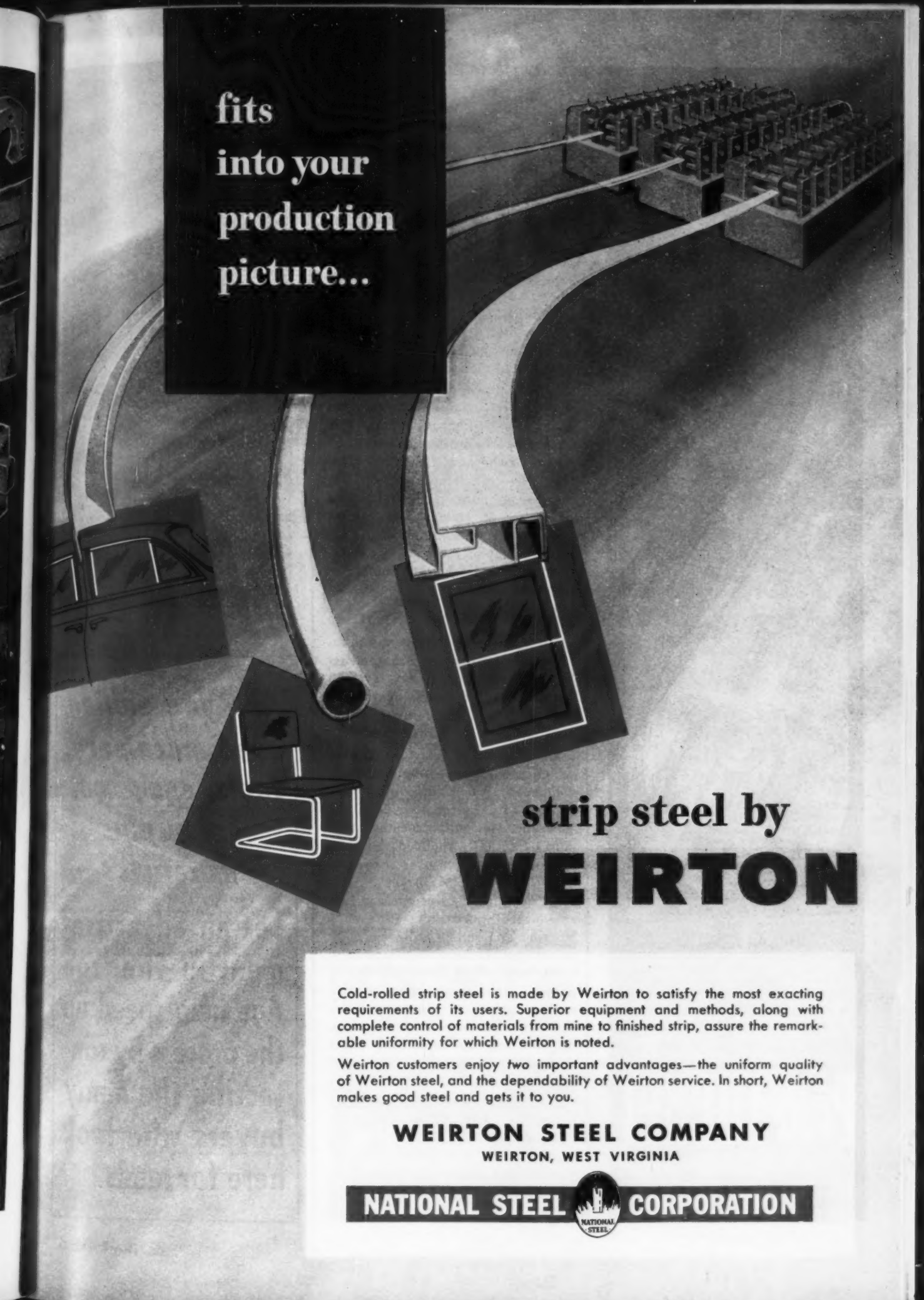
Problems Conquered—Prior to World War II a half dozen laboratories could perform experiments within a few degrees of absolute zero. The Cryostat, developed in 1946, greatly simplified low-temperature research and there are now over 50 such machines in the United States, Canada and foreign countries.

The Cryostat, basic tool for cryogenic research, was conceived by Professor S. C. Collins of Massachusetts Institute of Technology. Many difficulties inherent in early helium liquefaction equipment, such as consumption of liquid nitrogen, and formidable vacuum problems were eliminated.

Compresses Helium—The cryostat compresses helium gas to 200 psi, a relatively low pressure for such extreme refrigeration, in four stages. Heat of compression is removed by cooling with city water and thermal isolation of the cold end by use of gas-to-gas heat exchange.

Temperature differentials at intermediate points in the heat exchanger system are produced by isentropic expansion through engines. Liquefaction is accomplished at the cold end, using the Joule-Thomson effect, by isenthalpic expansion through a needle valve where the temperature falls below the liquefaction point of helium.

Turn Page



Cold-rolled strip steel is made by Weirton to satisfy the most exacting requirements of its users. Superior equipment and methods, along with complete control of materials from mine to finished strip, assure the remarkable uniformity for which Weirton is noted.

Weirton customers enjoy *two* important advantages—the uniform quality of Weirton steel, and the dependability of Weirton service. In short, Weirton makes good steel and gets it to you.

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NATIONAL STEEL CORPORATION

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EYE BOLTS

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Among Pawtucket's many specialty products, these lower-cost eye bolts or "swing" bolts are the leaders in this field. Pawtucket's exclusive production method keeps cost low, dimensional accuracy unusually high and strength above standard.

Pawtucket eye bolts are made in standard sizes ¼" and larger, or to your specifications. In any size, you can depend on a uniform Class 3 fit.

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—Technical Briefs—

LIGHTING:

Revolution comes through demands for more and better light.

A revolution in industrial lighting may be on the way. Demands for greater comfort, better quality and lower maintenance costs are resulting in many new industrial lighting designs, especially in the fluorescent field, R. F. Vandenboom and D. L. Beeman of the General Electric Co. will tell members of the Assn. of Iron & Steel Engineers meeting in Cleveland Sept. 30 to Oct. 3.

Maintenance of lighting has always been a problem in steel mills. Dust-tight units, reflectors with properly designed ventilation or use of the new high-bay industrial reflector lamps—either filament or mercury—are outstanding examples of lighting equipment that reduces maintenance. Group replacement of fluorescent or filament lamps also lessens the maintenance problem by decreasing labor costs.

Power Needs—Current minimum recommendations for illumination levels in steel mills vary from 10 footcandles for rough operations such as billet, blooming and hot strip mills to 300 footcandles.

Equipment is now available which provides an ample upward component of light output together with better shielding. At the same time, dirt accumulation may be actually reduced. By providing these features economically, the factory worker is getting the same kind of eye comfort considered necessary for office workers and school children.

Savings—With increased use of gaseous discharge lamps, considerable savings in the cost of the lighting distribution systems can be obtained by combining light and power on the same 480-v substation.

Still more money can be saved by using 480Y/277-v combined light and power substations and operating all mercury or fluorescent lamp ballasts line-to-neutral, i.e. at 277-v, off the 480Y/277-v system.

QUANTITY PRODUCTION OF GREY IRON CASTINGS

ONE OF THE NATION'S LARGEST AND MOST MODERN PRODUCTION FOUNDRIES

ESTABLISHED 1866

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Are you selling used machinery, tools, equipment or surplus materials?

Let an advertisement in The Iron Age help speed up the process by contacting the many buyers who look here for leads.

TOOL ENGINEERS:

Midwest meeting centers on use of carbides.

More than 500 Midwest members of the American Society of Tool Engineers will participate in a roundtable discussion "Engineering the Carbide to the Job" at an ASTE meeting Nov. 8. The meeting, at Urbana, Ill., will be held in cooperation with the Mechanical Engineering Dept. of the University of Illinois.

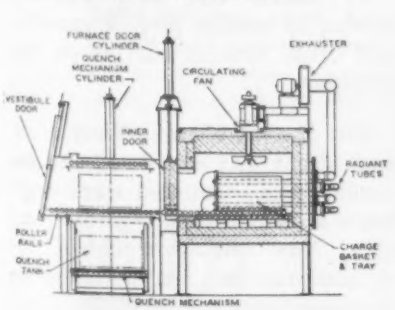
Other sessions on die casting, forging, safety and time study are planned for the conference. The recently organized ASTE National Professional Engineering Committee, chairmanned by C. M. Smillie, will present a program designed to foster professional development within the field of tool engineering.

Cable Sheath Corrosion Discussed

Adequate protection of underground cable sheaths is needed to halt corrosion caused by stray and non-stray currents, T. W. Alexander, Jr., Bell Telephone Co., Pittsburgh, will report to members of the Assn. of Iron & Steel Engineers meeting at Cleveland, Sept. 30 to Oct. 3.

Furnace Boosts Production

A new batch furnace for case and homogenous carburizing, dry cyaniding, clean hardening and carbon restoration at high production rates will be shown by Surface Combustion Corp. at the 34th National Metal Exposition in Philadelphia Oct. 20 to 24. Drawing shows heating chamber and quench tank construction of 500 lb per hr capacity furnace. Operating temperature range is 1450° to 1750° F. Enclosed quench chamber permits rapid quench under controlled atmosphere conditions.



Turn Page

In one operation, this Farquhar Hydraulic Press forms straight mild steel bars into elevator brackets—at closer tolerances than any former method.

OTIS ELEVATOR COMPANY *boosts production, slashes time and labor costs in half, with this*

FARQUHAR HYDRAULIC PRESS

In forming lengths of mild steel, the Otis Elevator Company, world's largest elevator and escalator manufacturer, would heat steel and bend it while it was hot. Trying to improve on this system, Otis Production Engineers developed a cold bending process. Farquhar Engineers were contacted, and a 250 Ton "Bulldozer" Horizontal Press was recommended and installed. By bending the steel bars cold in the Bulldozer, Otis has effected a 50% increase in production alone! Time and labor costs have been reduced an estimated 33⅓%! In addition, the Bulldozer operates at closer tolerances than the old heat and bend method. All this, 8 hours a day, 5 days a week, with maintenance costs that Otis terms "negligible."

Farquhar Presses Cut Your Costs

Just one more example of cost-cutting Farquhar performance in heavy production! Farquhar Presses are built for the job . . . assure faster production due to rapid advance and return of the ram . . . greater accuracy because of the extra guides on the moving platen . . . easy, smooth operation with finger-tip controls . . . longer life due to positive control of speed and pressure on the die . . . long, dependable service with minimum maintenance cost!

Farquhar engineers are ready to help solve whatever production problem you may have. Your request will bring them running . . . at no obligation, of course.

Send for free catalog showing Farquhar Hydraulic Presses in all sizes and capacities for all types of industries. Write to: A. B. FARQUHAR Co., Hydraulic Press Department, 1503 Duke St., York, Pa.

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* Another new product — the **PERKINS "BENDIT 15"**— a patented metal forming machine which bends and shapes sheets, rods; strips tubing into innumerable complex as well as simple forms that would be difficult or even impossible to make by other means. Eliminates need for expensive tools or specialized skills. Height 47", net weight 200 lbs. Write us today for descriptive catalog, prices, etc.

PERKINS MACHINE & GEAR CO.

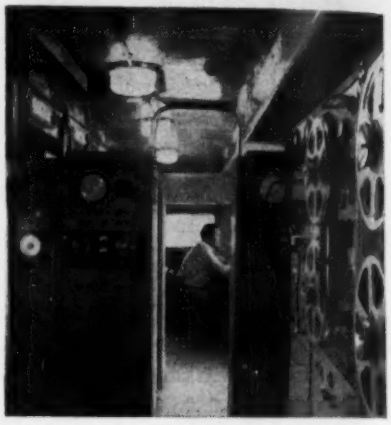
WEST SPRINGFIELD, MASSACHUSETTS

TELEMETRY:

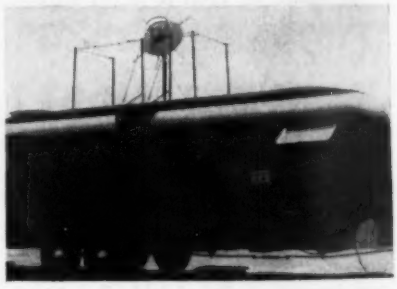
Use automatic radio transmission to solve flight problems.

Simple automatic telemetering techniques, devised during 5 yrs of missile design have been modified for piloted aircraft. It is the first successful method of continuously monitoring test flights by telemetering the readings of conventional airborne instrumentation.

The system, small in size and simple in theory and practice, presents data in a manner that lends itself to automatic data reduction.



INTERIOR of telemetering trailer used by Douglas Aircraft Co. engineers to monitor of supersonic pilot-guided planes while in flight. Tape and film give permanent record.



HELIX COIL atop trailer keeps two 88-channel FM units on beam as plane zooms overhead. Magnetic tape recorders, motion pictures keep audio-video records of data received.

Previously test data was recorded by motion picture cameras and other devices carried on the airplane.

Old Method Slow — Only after each flight was completed and recorded data evaluated were engineers able to proceed with the next step. Now engineers obtain instantaneous data on performance characteristics during flight.

Turn Page

IN VAPOR DEGREASING

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"TRICLENE" D Trichlorethylene is the result of over 20 years of research and practical experience in the degreasing field. Made under carefully controlled conditions by the pioneer manufacturer of degreasing solvents in the U. S., each shipment of "Triclene" D is carefully pretested for stability and purity... must meet test standards higher than those established by military and federal specifications (MIL-7003 and O-T-634). Yet "Triclene" D costs no more than other leading brands of degreasing solvents.

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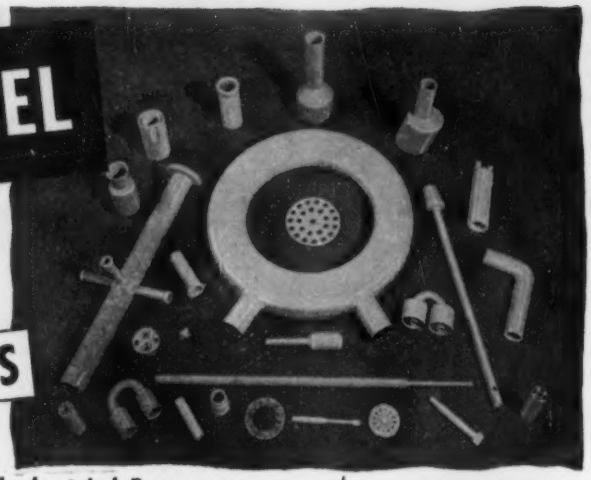

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SPECIAL WASHERS to your specifications. Any size . . . any metal . . . any quantity. More than 30 years of specialized experience in designing and manufacturing Special Washers . . . more than 12,000 sets of tools at your disposal.
SMALL STAMPINGS in any metal . . . any quantity. Hundreds of satisfied customers are testimony to our high quality and reasonable prices. Send us your specifications or prints.
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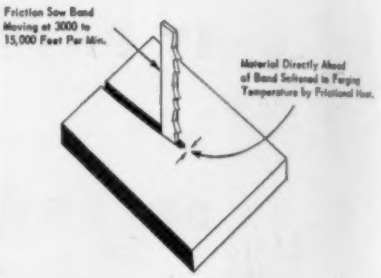
FRICTION SAWING:

High speed cutting method softens metals first, then cuts.

Friction sawing, an amazingly rapid means of cutting metals, affords such rapid cutting that existing concepts as to what constitutes maximum production must be revised. Yet, the method is not widely known in industry.

Friction sawing, a "bandsawing" method, does not rely completely on the cutting action of sharp teeth. Frictional heat generated between the saw band teeth and the material when the band is moving at 3000 to 15,000 bpm is used.


Friction Saw Band Moving at 3000 to 15,000 Feet Per Min.
Material Directly Ahead of Band Softened in Forging Temperature by Frictional Heat.

FRICTION SAWING principles are demonstrated above. High speed band saw with few teeth softens metal to forging temperature by frictional heat.

Forging Temperature — Frictional heat raises the temperature of the material directly ahead of the band to approximately forging temperatures at which point it is soft and relatively plastic. Bandsaw teeth bite more easily into the softened material virtually scooping this material from the kerf. Because the material is softened, tooth sharpness is not a prime factor in cutting rate and a saw band can cut rapidly through the work even with dull teeth.

In conventional sawing, tool and material are kept as cool as possible to retain tooth temper, sharpness and cutting efficiency. A sharply curled chip, result of a hard shearing action, is produced. The frictional sawing chip is shorter, more stubby, and has less curl.

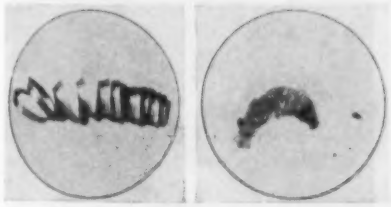
Generate Heat—Teeth of a friction saw band, dull or sharp, serve

two functions. They efficiently generate heat and they remove metal as fast as softening takes. This assures rapid cutting, reducing feed pressure required, and reducing burr to a minimum.

Fast cutting is a requisite for effective friction sawing. Too slow a cutting rate allows the heat to penetrate more deeply through the material, offtimes destroying the desirable metallurgical characteristics of the metal.

Ferrous Metals Best—Friction sawing is not ordinarily recommended for nonferrous metals because these are free-machining

SPLITTING a milling cutter. The friction saw band can cut materials harder than the band itself.



ENLARGED CHIPS produced by conventional sawing, left, and friction sawing, right.

materials that are readily cut in the conventional manner. A better cut finish is usually obtained on these metals with conventional sawing. Because of the comparatively low melting points of nonferrous metals, there is a tendency for the softened metal to weld to the walls of the kerf.

Because of the concentration of heat required for softening metal, friction sawing is not recommended for solid metals over 1 in. thick.

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ALUMINUM BRASS AND BRONZE!

When high standards dictate the fastening of aluminum with aluminum, JAQUES nuts, bolts, screws, etc., are the answer. Cold-headed and heat-treated, JAQUES aluminum fasteners are light, strong, and durable.

All non-ferrous metals and alloys, incuding naval brass, silicon bronze and monel, can be furnished in standard and special parts.

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"New Process"

Punches · Dies · Rivet Sets
Compression Riveter Dies

Made of highest standards and uniform quality thus insuring maximum service.

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That's the way we want it to be, here at Claymont.

Because that's the way we make sure that your order for alloy steel gets careful, individualized supervision . . . painstaking attention to every processing detail right from the front office, through our laboratories, down to the men who roll your steel.

Let us show you how our *personal touch* assures you of alloy steels that are truly tailored to your specialized requirements.

Write or call Claymont Steel Products Department, Wickwire Spencer Steel Division, Claymont, Delaware.

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CLAYMONT STEEL PRODUCTS

PRODUCTS OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

CF&I

Coal Pay Hike Raises Steel Cost Up To 60c a Ton

Coal workers get 10.4 pct wage boost . . . Steel's coal costs rise 40¢ per ton . . . Steel industry expects controls to come off some steel items in the first quarter of 1953.

The steel industry must dig deeper into its pocket to pay for the higher cost of coal resulting from the quick settlement of northern coal producers with John L. Lewis' United Mine Workers. The settlement of $1.90 per day increase in wages and 10¢ per ton more to be donated to the union's welfare fund will cost steel mills from 50¢ to 60¢ per ton of finished steel. Their coal costs will rise between 37¢ and 40¢ per ton.

The actual wage increase will give miners 23¾¢ per hr on the basis of an 8-hr day. Tack the 10¢ per ton welfare fund money to this and the "package" won by the union equals about 31¢ per hr. Average daily wage of the northern coal industry was about $17.86. The increase amounts to 10.4 pct of that average. This is seen as topping the Wage Stabilization Board formula.

Avert a Strike—This was a settlement born in haste to avoid a strike. It reflected industry's desire to avoid another economic crisis, masterful maneuvering by Mr. Lewis which split the coal operators into manageable segments, and determination of the coal producers to resist cutting the number of hours in the working day. The working day stand had to be paid for by an increased wage offer.

The northern group originally offered $1.60 per day and 5¢ a ton for the welfare fund. Mr. Lewis originally asked for 25¢ an hr plus a 7-hr working day, with the same pay given for 7 hours as for 8. The union then demanded $1.80 per day on the basis of a 7¾ hr day.

When this failed he demanded $2 per day with 10¢ per ton for the fund. Northern operators countered with an offer of $1.70 per day and 7½¢ for the fund. After the tug and pull of negotiation the present settlement was reached.

Controls — Although the steel strike silenced talk of decontrol, this is expected to again become a lively topic of debate toward the end of this year. By the first quarter of next year the industry expects supply of some items to be sufficiently abundant to permit lifting of controls over them. Most steel people have set second quarter of 1953 as a goal for complete decontrol.

But this is where the rub comes in. Washington indicates willingness to relax controls over specific items as supply permits but the planners give no indication of ever willingly relinquishing control authority.

Election's the Key — Probably the biggest factor in determining how soon and to what extent controls are removed will be the election this fall. For this reason, much of what is said about controls and the need for them must be taken as pure window dressing.

From a practical viewpoint, steel people expect to start gaining in the long race to fill supply pipelines during the fourth quarter. By the first quarter of next year they expect a number of products to be in ample supply. Balance in supply and demand of major tonnage products is expected at the second quarter.

Taper Off Later—This week the steel market is a paradox. Consumers are exerting all-out pressure for every available pound they can get. But consumers and producers alike expect the *intensity* of demand to begin tapering off in the early part of next year. When that happens the differences in demand for various products will become strikingly apparent. At present the impact of 19 million tons of steel lost because of the strike makes nearly all steel items appear uniformly tight.

Working off the tremendous carryover of old orders is one of the sternest jobs facing the industry. This is highlighted by the National Production Authority announcement that most manufacturers of civilian goods will be permitted a first quarter quota allocation only 75 pct as large as for fourth quarter of this year. This is in spite of the fact that they expect the industry to hang up an all-time production record during that period. The goal is to clean up all carryover orders by the end of the first quarter.

For How Long — Steel people doubt that consumers can long accept finished steel deliveries at a rate of more than 22 million tons or more a quarter. The story is as old as business itself. Once the pipelines begin to get full, a wave of inventory correction slows consumer demand. This is what some steel people think might happen about the middle of next year.

It is becoming more and more evident that military set-asides have been on the liberal side. One producer estimates the military take of tonnage allocated for this purpose ranges from 50 to 90 pct, depending on the product.

On pipe and tinplate defense producers are ordering 50 pct or less of their quotas. On large bars, plates and hot-rolled sheets, military orders are taking up to 90 pct of set-asides. Cold-rolled sheets are also in strong demand from defense producers.

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. . . Ready to give you something *above* the ordinary in service on tool, alloy, or stainless steel. Look how they can help you:

There's the man on the order desk in your nearby Carpenter MILL-BRANCH WAREHOUSE. He's waiting to give you quick information on prices, sizes, and grades. There's the representative ready to help you with tooling and production problems. There's the crew of delivery men backed by time-saving equipment to get out emergency orders.

And there's more. For *every* man in your nearby Carpenter MILL-BRANCH WAREHOUSE, there are *hundreds more* in the Reading Mill waiting to work for you. That's the difference. For Carpenter's warehouses are MILL-BRANCH WAREHOUSES. Every time you call you have a direct line on Mill Laboratory and Metallurgical Help, Mill Quality and Uniformity—*comprehensive* Mill Service.

You'll find it's the *closest* thing to having a *specialty* steel Mill right in your own back yard!

Here's what *you* want in steel service. To discover how easy it is to get it, call Carpenter. Simply pick up your phone and call your nearest Carpenter MILL-BRANCH WAREHOUSE or Distributor. The Carpenter Steel Co., 121 W. Bern St., Reading, Pa.

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Market Briefs and Bulletins

Steel Expansion—Annual ingot capacity of Great Lakes Steel Corp., Detroit, was increased to 3.15 million tons with the lighting of a new blast furnace Monday. The 480,000 ton furnace, coupled with recent enlargements of openhearths, boosts Great Lakes' capacity by 580,000 tons. Also under construction is a battery of 70 coke ovens, a 45 x 90-in. slabbing mill and two 25-ton Bessemer converters. Weirton Steel Co., Weirton, W. Va., also a National Steel Corp. Subsidiary started a new blast furnace on Monday.

Labor Pass-Through—Higher labor costs are providing the tightest pinch in the price squeeze on the steel shipping container industry. Office of Price Stabilization turned thumbs down on a pass-through of these specific costs but is willing to apply the earnings standard to find out if producers are eligible for pricing relief. Some difficulty may arise in use of the standard because only a small percentage of container production is handled by single-line companies. Industry wants OPS to go ahead with any available means to permit higher prices for their products. Many other industries are also interested in passing through higher labor costs.

Civilian Needs Bypassed—Carbon steel supplies for civilian production of press and hammer forgings will be about 35 pct of normal during fourth-quarter 1952, National Production Authority predicts. Mounting military demand is held responsible. Full impact of military and atomic-energy requirements won't be known until Oct. 15. NPA has promised the military its demands will be handled as though there had been no steel strike and that it will clean up all orders by the end of the year. Only way to accomplish this goal is to cut civilian allotments to the bone.

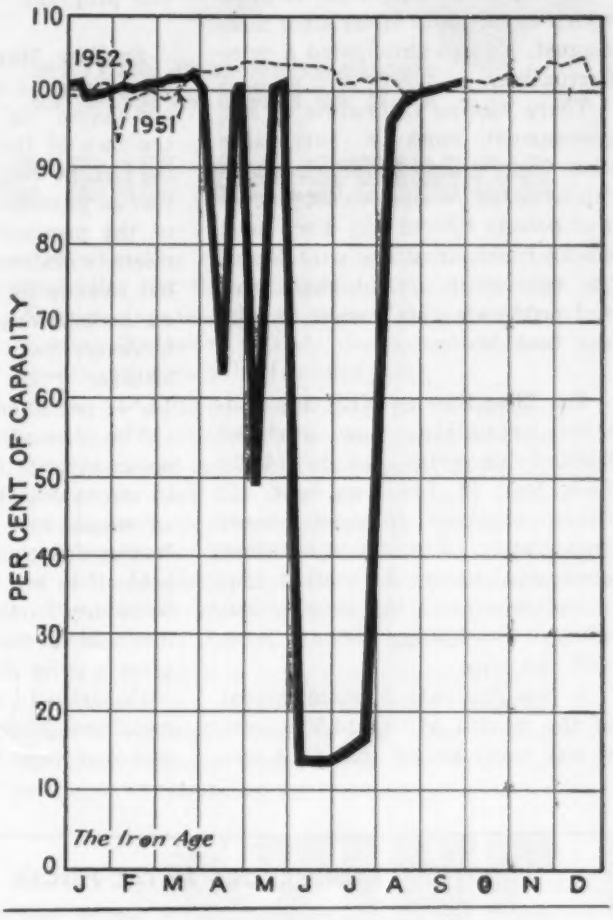
Price Rise—Price relief may be coming for the oven coke industry, tar processors and coal chemical producers. Spokesmen of the different industries met with office of Price Stabilization officials to discuss the possibility of price hikes to offset higher costs already incurred and others anticipated. A group representing coal chemicals firms told OPS that rising fuel costs have forced some producers to use tar instead of oil for firing openhearth furnaces. Use of tar as fuel limits the amount available for chemical use, they pointed out.

Magnesium Licensing—Work has started on licensing of third quarter exports of magnesium metal in all forms. A total of 1.65 million lb will be made available for third quarter export, Office of International Trade says. Of this amount 150,000 lb will be available for commercial channels. Remainder will be issued for mutual defense requirements.

New Base?—In its attempt to gain a ceiling price increase, the low alloy steel castings industry is also hoping to persuade the Office of Price Stabilization to change the standing base earning period of 1946-49. Industry has told OPS this was a depressed period and does not reflect normal operating conditions. OPS is considering the matter along with the ceiling increase.

Production Up—A Westinghouse spokesman predicts production at its Electric Appliance Div. will increase by at least 25 pct within the next 3 months. Because of the sharp increase in electric appliance sales during the last 2 months, the company expects its sales billings for the year to equal or exceed the record 1950 level.

Steel Operations



District Operating Rates—Per Cent of Capacity

Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	West	Buffalo	Cleveland	Detroit	Wheeling	South	Ohio River	St. Louis	East	Aggregate
Sept. 14	103.0	105.0	103.0	100.0	103.0	104.5	104.5	106.0	99.0	101.0	93.0	101.0	95.0	102.0
Sept. 21	103.0	106.0	103.0	100.0	102.5	104.5	102.0	106.0	99.0	101.0	90.0	106.5	92.0	102.5

Beginning Jan. 1, 1952, operations are based on annual capacity of 108,587,670 net tons.

Demand Off As Zinc Price Wavers

Consumers are a bit puzzled over the recent shenanigans as zinc was boosted, then cut . . . Lack of confidence in the market keeps buyers wary . . . Demand off—By *R. L. Hatschek.*

The recent slight fluctuations in zinc prices have injected some mild confusion into that market. Here's what happened! Things had been coasting along fairly smoothly with zinc in excellent supply and fair demand (after the steel strike which almost completely cut off demand from galvanizers and other consumers). Unfilled orders were relatively low. Outlook was for continuation of the 14.00¢ per lb price which had been in effect since mid-August. No one anticipated a price fluctuation.

There was no intimation of any government stockpile purchasing plan though General Services Administration would accept metal. But nobody offered any since most stocks represented ore paid for at the equivalent of a higher price and producers didn't want to take any book losses.

Up, Then Down—With this situation prevailing, one producer boosted his price ½¢ to 14.50¢ f.o.b. East St. Louis on Sept. 12. Other suppliers followed almost immediately. Despite this rather unexpected move, the market continued to coast along steadily but quietly. Stockpiling took a jump with the price.

A few days after establishment of the market at the 14.50¢ level, it was made known that GSA was looking into availability of zinc for stockpile delivery through September 1953. A similar query went out on lead, asking its availability through March 1953. Suppliers were also quizzed on monthly quantities and price basis—flat price or average. No explanation was made by the agency but it was thought that the government might just be rounding out its materials stockpile program.

Smelter Moves—Last week, on Thursday, one of the custom smelters shaved ½¢ from his price. In the face of the hint that stockpiling might be resumed this move was as unsuspected as the increase of the previous week. Other suppliers withdrew from the market but reluctantly followed the decline on the following day. One producer, however, put up some stiff resistance and was still quoting 14.50¢ per lb on Friday.

The price adjustment was said to be an attempt to bring demand up to stocks but the immediate effect, as usual, was to reduce demand. Reason for this is that consumers held off to see if there were going to be any further declines. Buyers distrust the stability of the market after a price dip. The week ended with virtually no demand for the metal and prices on the commodity exchange were lower.

This Monday the same smelter further cut his price to 13.50c per lb. Other suppliers dropped out of the market.

Labor Picture—General picture of the labor situation in the Connecticut Valley seems to be getting brighter. The 14-week work stoppage at Seymour Mfg. Co. was ended last week and people were getting optimistic about United Auto Workers-Scovill Mfg. Co. negotiations. The firm is reported to have made a new offer which approaches union demands and hints of further compromise were made.

But Calumet & Hecla Consolidated Copper Co. wasn't doing so well. The situation there was just as bleak as ever. This firm, just granted a Capehart increase in its copper ceiling to 27.50¢, hasn't sold any material on the higher basis as yet because of the strike. Normal production is about 3000 tons of copper a month.

Quicksilver Higher — Present mercury supplies available for spot delivery are scanty with the result that the price has jumped to a range of $193 to $195 per 76-lb flask. Additional imports, due to arrive in the near future, are expected to bring the price back down.

Tin Trade Dull — While the quotation remained at $1.21⅜ per lb for prompt tin, there was practically no market at the end of the week. Reports indicate that no prompt or spot material was sold on Friday and there wasn't much for future delivery. The London market was steady and the week ended with a c.i.f. New York equivalent of $1.23 3/16 at Singapore.

Lead Demand—Price of lead continued steady at 16¢ New York but demand was slipping off as a result of good tonnages booked for October needs. Outlook is for maintenance of the current price with the possibility of a slight upward revision, perhaps in December. Scrap lead was reported softer.

NONFERROUS METAL PRICES

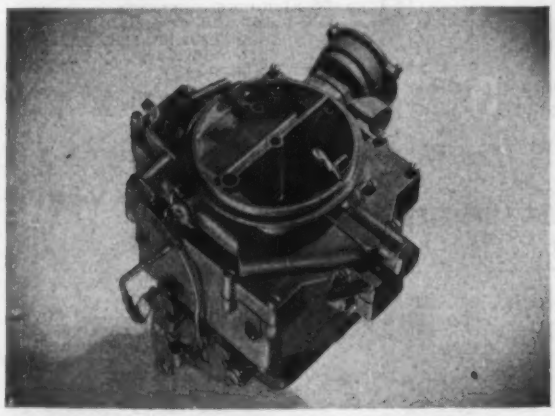
	Sept. 17	Sept. 18	Sept. 19	Sept. 20	Sept. 22	Sept. 23
Copper, electro, Conn.	24.50	24.50	24.50	24.50	24.50	24.50
Copper, Lake delivered	24.625	24.625	24.625	24.625	24.625	24.625
Tin, Straits, New York	$1.21⅜	$1.21⅜	$1.21⅜	....	$1.21⅜	$1.21⅜*
Zinc, East St. Louis	14.50	14.00	14.00	14.00	13.50	13.50
Lead, St. Louis	15.80	15.80	15.80	15.80	15.80	15.80

Note: Quotations are going prices.
*Tentative.

WHEN ZINC IS BEST SUITED FOR THE JOB —WHY USE SUBSTITUTES?
The fallacies of zinc substitution programs under the guise of "conservation" are brought to light in the new pamphlet "More Facts About Zinc" just issued by the American Zinc Institute, Inc.
ask us for a copy
ZINC IS IN GOOD SUPPLY AND YOU CAN DESIGN WITH FULL CONFIDENCE THAT THE METAL WILL BE AVAILABLE WHEN YOU NEED IT!

NO REASONABLE SUBSTITUTE FOR ZINC DIE CASTINGS

These ZINC Die Castings are the principal assembly components of the new four-jet automobile carburetor pictured below. By no other means of manufacture can such amazingly complex parts be produced at anything approaching comparable cost. After simple trimming operations, only the tapping of cored holes and the drilling of additional holes at odd angles are required to prepare these parts for assembly. Die casting is, truly, the shortest distance between raw material and finished part.



This four-jet carburetor is really two carburetors in one. The primary unit alone is in use until unusual acceleration is called for (as when passing a moving car), then the second unit comes into play.

While a carburetor bowl may be an extreme example of castability, it is an established fact that the physical and economic advantages of ZINC Die Castings are such that other materials and manufacturing methods seldom can be substituted. *With ample supplies of Special High Grade zinc assured, and with die casting equipment readily available, product engineers should continue to take advantage of the economies of ZINC Die Castings.*

If you are not now using ZINC Die Castings in your products, you may be overlooking a practical means of materially lowering your costs. Consult with any commercial die caster—or write to us. Ask for a copy of "Designing for Die Casting."

The New Jersey Zinc Company, 160 Front St., New York 38, N. Y.

ZINC
FOR DIE CASTING ALLOYS

The Research was done, the Alloys were developed, and most Die Castings are based on

HORSE HEAD SPECIAL (99.99 + % Uniform Quality) ZINC

Nonferrous Prices

MILL PRODUCTS

(Cents per lb, unless otherwise noted)

Aluminum

(Base 30,000 lb, f.o.b. ship. pt. frt. allowed)

Flat Sheet: 0.188 in., 2S, 3S, 31.6¢; 4S, 61S-O, 33.6¢; 52S, 35.8¢; 24S-O, 24S-OAL, 34.5¢; 75S-O, 75S-OAL, 41.9¢; 0.081 in., 2S, 3S, 32.8¢; 4S, 61S-O, 35.2¢; 52S, 37.4¢; 24S-O, 24S-OAL, 35.8¢; 75S-O, 75S-OAL, 43.9¢; 0.032 in., 2S, 3S, 34.5¢; 4S, 61S-O, 39.0¢; 52S, 41.8¢; 24S-O, 24S-OAL, 43.8¢; 75S-O, 75S-OAL, 54.8¢.

Plate ¼ in. and Heavier: 2S-F, 3S-F, 29.7¢; 4S-F, 31.7¢; 53S-F, 33.4¢; 61S-O, 32.3¢; 24S-O, 24S-OAL, 34.0¢; 75S-O, 75S-OAL, 40.7¢.

Extruded Solid Shapes: Shape factors 1 to 5, 35.5¢ to 77.2¢; 12 to 14, 36.2¢ to 93.5¢; 24 to 26, 38.7¢ to $1.22; 36 to 38, 45.9¢ to $1.79.

Rod, Rolled: 1.064 to 4.5 in., 2S-F, 3S-F, 39.4¢ to 35.2¢; cold-finished, 0.375 to 3 in., 2S-F, 3S-F, 42.5¢ to 36.8¢.

Screw Machine Stock: Rounds, 11S-Ts, ⅛ to 11/32 in., 56.2¢ to 44.1¢; ⅜ to 1½ in., 43.6¢ to 41.0¢; 1 9/16 to 3 in., 40.4¢ to 37.8¢; 17S-Ts, 1.6¢ per lb lower. Base 5000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in., 2S, 41.5¢ to 30.5¢; 52S, 50.4 to 36.8¢; 56S, 53.6¢ to 44.1¢; 17S-T4, 56.7¢ to 39.4¢; 61S-T4, 50.9¢ to 88.9¢.

Extruded Tubing: Rounds, 63S-T5, OD in in.: 1¼ to 2, 38.9¢ to 56.7¢; 2 to 4, 35.2¢ to 47.8¢; 4 to 6, 35.7¢ to 43.6¢; 6 to 9, 36.2¢ to 45.7¢.

Roofing Sheet: Flat, 0.019 in., x 28 in., per sheet, 72 in., $1.199; 96 in., $1.598; 120 in., $1.997; 144 in., $2.398. 0.24 in. x 28 in., 72 in., $1.448; 96 in., $1.931; 120 in., $2.414; 144 in., $2.897. Coiled sheet: 0.019 in. x 28 in., 26.6¢ per lb; 0.024 in. x 28 in., 28.2¢ per lb.

Magnesium

(F.O.B. mill, freight allowed)

Sheet and Plate: FS1-O, ¼ in., 63¢; 3/16 in., 65¢; ⅛ in., 67¢; B & S Gage 10, 68¢; 12, 72¢. Specification grade higher. Base: 30,000 lb.

Extruded Round Rod: M, diam in., ¼ to 0.311 in., 74¢; ½ to ¾ in., 57.5¢; 1¼ to 1.749 in., 53¢; 2½ to 5 in., 48.5¢. Other alloys higher. Base up to ¾ in. diam, 10,000 lb; ¾ to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes, Rectangles: M. In weight per ft, for perimeters less than size indicated, 0.10 to 0.11 lb, 3.5 in., 62.3¢; 0.22 to 0.25 lb, 5.9 in., 59.3¢; 0.50 to 0.59 lb, 8.6 in., 56.7¢; 1.8 to 2.59 lb, 19.5 in., 53.8¢; 4 to 6 lb, 28 in., 49¢. Other alloys higher. Base, in weight per ft of shape: Up to ½ lb, 10,000 lb; ½ to 1.80 lb, 20,000 lb; 1.80 and heavier, 30,000 lb.

Extruded Round Tubing: M, wall thickness, outside diam, in., 0.049 to 0.057; ¼ in. to 5/16, $1.40; 5/16 to ⅝, $1.26; ½ to ⅝, 93¢; 1 to 2 in., 76¢; 0.165 to 0.219, ⅝ to ¾, 61¢; 1 to 2 in., 57¢; 3 to 4 in., 56¢. Other alloys higher. Base, OD in in.: Up to 1½ in., 10,000 lb; 1½ in. to 3 in., 20,000 lb; 3 in. and larger, 30,000.

Titanium

(10,000 lb base, f.o.b. mill)

Commercially pure and alloy grades: Sheets and strip, HR or CR, $15; Plate, HR, $12; Wire, rolled and/or drawn, $10; Bar, HR or forged, $6; Forgings, $6.

Nickel and Monel

(Base prices, f.o.b. mill)

	"A" Nickel	Monel
Sheets, cold-rolled	77	60½
Strip, cold-rolled	83	63½
Rods and bars	73	58½
Angles, hot-rolled	73	58½
Plates	75	59½
Seamless tubes	106	93½
Shot and blocks	..	53½

Copper, Brass, Bronze

(Freight prepaid on 200 lb)

	Sheet	Rods	Extruded Shapes
Copper	45.52	....	45.12
Copper, h-r	....	41.37	....
Copper, drawn	....	42.62	....
Low brass	42.34	42.03	....
Yellow brass	40.17	39.86	....
Red brass	43.10	42.79	....
Naval brass	44.72	38.78	40.04
Leaded brass	....	....	38.02
Com'l bronze	44.39	44.08	....
Mang. bronze	48.44	42.83	43.89
Phos. bronze	64.72	64.97	....
Muntz metal	42.69	38.25	39.50
Ni silver, 10 pct	51.96	54.18	....

PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed	20.00
Aluminum pig	19.00
Antimony, American, Laredo, Tex.	39.00
Beryllium copper, 3.75-4.25% Be	$1.56
Beryllium aluminum 5% Be, Dollars per lb contained Be	$69.50
Bismuth, ton lots	$2.25
Cadmium, del'd	$2.00
Cobalt, 97-99% (per lb)	$2.40 to $2.47
Copper, electro, Conn. Valley	24.50
Copper, Lake, delivered	24.625
Gold, U. S. Treas., dollars per oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$2.25
Iridium, dollars per troy oz.	$200
Lead, St. Louis	15.80
Lead, New York	16.00
Magnesium, 99.8+%, f.o.b. Freeport, Tex., 10,000 lb.	24.50
Magnesium, sticks, 100 to 500 lb.	42.00 to 44.00
Mercury, dollars per 76-lb flask, f.o.b. New York	$193 to $195
Nickel electro, f.o.b. N. Y. warehouse	59.58
Nickel oxide sinter, at Copper Creek, Ont., contained nickel	52.75
Palladium, dollars per troy oz.	$24.00
Platinum, dollars per troy oz.	$90 to $93
Silver, New York, cents per oz.	83.25
Tin, New York	$1.21¾
Titanium, sponge	$5.00
Zinc, East St. Louis	13.50
Zinc, New York	14.33
Zirconium copper, 50 pct	$6.20

REMELTED METALS

Brass Ingot

(Cents per lb, delivered carloads)

85-5-5-5 ingot	
No. 115	27.25
No. 120	26.75
No. 123	26.25
80-10-10 ingot	
No. 305	33.00
No. 315	30.50
88-10-2 ingot	
No. 210	41.50
No. 215	40.00
No. 245	34.50
Yellow ingot	
No. 405	23.25
Manganese bronze	
No. 421	30.50

Aluminum Ingot

(Cents per lb, 100,000 lb and over)

95-5 aluminum-silicon alloys	
0.30 copper, max.	20.6
0.60 copper, max.	20.4
Piston alloys (No. 122 type)	20.5
No. 12 alum. (No. 2 grade)	19.5
108 alloy	20.6
195 alloy	20.8
13 alloy (0.60 copper max.)	20.8
ASX-679	20.5
Steel deoxidizing aluminum, notch-bar granulated or shot	
Grade 1—95-97½%	18.80
Grade 2—92-95%	18.60
Grade 3—90-92%	18.40
Grade 4—85-90%	18.20

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, freight allowed, 500 lb lots)

Copper	
Cast, oval, 15 in. or longer	37.84
Electrodeposited	33⅜
Flat rolled	38.34
Forged ball anodes	43
Brass, 80-20	
Cast, oval, 15 in. or longer	34¾
Zinc, oval	26½
Ball, anodes	25½
Nickel, 99 pct plus	
Cast	76.00
Rolled, depolarized	77.00
Cadmium	$2.15
Silver 999 fine, rolled, 100 oz lots, per troy oz, f.o.b. Bridgeport, Conn.	97½

Chemicals

(Cents per lb, f.o.b. shipping points)

Copper cyanide, 100 lb drum	63
Copper sulfate, 99.5 crystals, bbl.	12.85
Nickel salts, single or double, 4-100 lb bags, frt. allowed	27½
Nickel chloride, 375 lb drum	27½
Silver cyanide, 100 oz lots, per oz.	67¼
Sodium cyanide, 96 pct domestic 200 lb drums	19.25
Zinc cyanide, 100 lb drum	47.7

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add ⅛¢ per lb for shipments of 20,000 to 40,000 lb; add 1¢ for more than 40,000 lb)

	Heavy	Turnings
Copper	21½	20¾
Yellow brass	19⅛	17⅞
Red brass	20¼	19⅝
Comm. bronze	20½	19¾
Mang. bronze	18½	17¾
Brass rod ends	18⅞	....

Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	19.25
No. 2 copper wire	17.75
Light copper	16.50
Refinery brass	17.25*
Radiators	14.75

* Dry copper content.

Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	19.25
No. 2 copper wire	17.75
Light copper	16.50
No. 1 composition	18.50
No. 1 comp. turnings	18.25
Rolled brass	15.50
Brass pipe	16.50
Radiators	14.75
Aluminum	
Mixed old cast	9 — 9¾
Mixed new clips	10 —11
Mixed turnings, dry	9 — 9½
Pots and pans	8½— 9

Dealers' Scrap

(Dealers' buying price, f.o.b. New York in cents per pound)

Copper and Brass

No. 1 heavy copper and wire	18¾—19½
No. 2 heavy copper and wire	17 —17½
Light copper	15½—16
New type shell cuttings	15½—16
Auto radiators (unsweated)	14 —14⅛
No. 1 composition	17½—18
No. 1 composition turnings	17 —17½
Unlined red car boxes	16½—17
Cocks and faucets	15 —15½
Mixed heavy yellow brass	11½—12
Old rolled brass	14½—15
Brass pipe	15½—16
New soft brass clippings	16 —16½
Brass rod ends	15½—16
No. 1 brass rod turnings	15 —15½

Aluminum

Alum. pistons and struts	6 — 6½
Aluminum crankcases	7 — 7½
2S aluminum clippings	10 —10½
Old sheet and utensils	7 — 7½
Borings and turnings	5 — 6
Misc. cast aluminum	7 — 7½
Dural clips (24S)	7 — 7½

Zinc

New zinc clippings	8 — 8½
Old zinc	6 — 6½
Zinc routings	3¾— 4¼
Old die cast scrap	4¾— 5

Nickel and Monel

Pure nickel clippings	35 —36
Clean nickel turnings	35 —36
Nickel anodes	35 —36
Nickel rod ends	35 —36
New Monel clippings	28 —29
Clean Monel turnings	20 —21
Old sheet Monel	28 —29
Nickel silver clippings, mixed	13 —14
Nickel silver turnings, mixed	12 —13

Lead

Soft scrap, lead	12½—13
Battery plates (dry)	7 — 7½
Batteries, acid free	4 — 5

Magnesium

Segregated solids	15 —16
Castings	14 —15

Miscellaneous

Block tin	100 —110
No. 1 pewter	70
No. 1 auto babbitt	55 —60
Mixed common babbitt	14½—14¾
Solder joints	19 —20
Siphon tops	60
Small foundry type	19 —19½
Monotype	15½—16
Lino. and stereotype	13½—14
Electrotype	12 —12½
Hand picked type shells	9¾—10
Lino. and stereo. dross	7
Electro. dross	6½

CANDID SHOT

. . . of Bunker Hill, the practically lead-free Zinc!

Examination of the spectrum emanating from the vaporization of the zinc sample and recorded on spectrographic plate quickly reveals the chemical content of the sample. The spectral lines indicate which elements are present and to what extent. Iron, lead and cadmium are the most commonly found impurities, but by far the most harmful from the standpoint of die casting is lead. Note the "lead" line of Bunker Hill zinc. It is hardly visible. It tells the story of an exceptionally low lead content in a zinc running consistently 99.995+% pure.

Bunker Hill, the first commercially available four-nines metal has never failed the die casting industry in consistency of purity. The elimination of lead from zinc was a notable advance in the art of zinc refining, and the enormous expansion in the use of zinc base die castings is the direct result of this outstanding metallurgical achievement.

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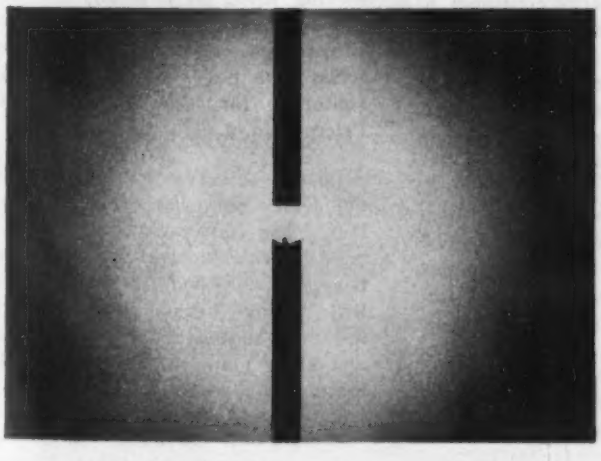


A spectrograph is basically a picture of a spark. All elements, when "excited" by heat or electrical discharge, emit radiations of known wave lengths, usually measured in Angstrom units (Å). In spectrography, this light is dispersed into its component parts (the spectrum) and recorded on a photographic plate. The wave lengths are always the same regardless of what other elements are present in the substance under investigation, and since these wave lengths are accurately known it is possible to identify each line in the spectrum and thus gain a complete knowledge of the composition of the metal. The density of the spectral line bears a direct relation to the amount of the element present, therefore the spectrograph also provides a basis for quantitative analyses.

Eastern Sales Agents: ST. JOSEPH LEAD CO., 250 PARK AVE., NEW YORK 17

BUNKER HILL 99.99+% ZINC

Sales Office for Pacific Coast: NORTHWEST LEAD CO., SEATTLE, WASH.

Market Holds a Strong, Even Tone

Scrap flow continues firm despite fact that there's no spectacular pushing by buyers . . . Electric furnace operators in Pittsburgh get eager . . . Detroit blast furnace starts.

The scrap iron and steel market maintained an even, strong tone this week. Movement of scrap continued firm despite the fact that most consumers were not actively pushing for metallics.

In Pittsburgh, the market was quiet but nonetheless firm. No soft spots were seen developing. Openhearth stockpiles remained towering in that district but electric furnace operators exerted virile demand on the market.

Blast furnace grades were a little sluggish in Chicago but traffic in openhearth and electric furnace grades was active. Dealers' stocks appeared to be slimming down in the face of manufacturing plant strikes cutting down industrial scrap receipts.

In Philadelphia, the market showed no marked change but remained steady and, in New York, steelmaking grades continued strong while cast took an easier tone.

Great Lakes Steel started its new blast furnace in the Detroit area but it caused no spurring of demand for blast furnace grades. These grades held their tendency to weakness but steelmaking grades kept their power.

In the Cleveland area one consumer accelerated his buying tempo as scrap flow was described as free. Scrap flow to St. Louis was sluggish and railroad lists have been snapped up. Cast iron grades were reported dull.

Pittsburgh — The market is quiet, but firm. It looks as though steelmaking grades will continue at ceiling through the balance of the year. Some mills are bearing down on inspection. Electric furnace grades continue relatively scarce in the face of strong demand. Inventory position of mills generally is good, although some smaller specialty producers are having trouble balancing receipts with consumption.

Chicago — Business in openhearth and electric furnace grades was holding well here last week, with blast furnace grades moving rather slowly. Dealers' inventories were again beginning to taper off, with the amount of scrap available in yards sinking rapidly. Two explanations were offered—a series of strikes in the Chicago area had cut scrap collection from plants, and dealers might have oversold within the last few weeks in an effort to unload when a market break seemed likely. The future of openhearth and electric furnace grades was regarded with greater optimism than a week previous.

Philadelphia — This market continues fairly quiet with no significant changes. Mills are all accepting scrap but there is no real push to get it. They are cautious and want only good quality material. Electric furnace grades are a tone easier on supply and more softness has crept into the cast market. One large consumer of cast grades was reported to have stopped shipments this week. Auto wreckers are cutting scrap and motor blocks are coming out in good volume.

New York—Market remained on an even keel from last week. Cast seemed a little weaker but no price drops were in evidence. There were some reports machine shop turnings had again slipped below ceiling but most in the trade maintained that ceiling prices still held.

Detroit — Same conditions of strength in openhearth and electric and a tendency to weakness in blast furnace grades continue in the Detroit scrap market. A new blast furnace entered the picture at Great Lakes but prompted no sudden buying of borings and turnings. Purchases by Ford kept the blast furnace grades from slumping. Automobile changeovers have caused a momentary lull in dealer scrap moving from small plants but this condition is temporary and causes little concern.

St. Louis—Scrap iron has been moving very slowly from the country to this industrial district, and railroad lists have been small and quickly absorbed. Cast iron grades are dull. No. 1 cast and brake shoes are now quoted at $47 and $41 respectively, delivered, which are the ceiling prices at shipping point. The freight is from $5 to $7 a ton.

Cleveland—Scrap is moving freely into the Cleveland and Youngstown areas. One Valley consumer has stepped up purchases to bring inventories back into line. Indications are that the market is in for a period of sustained strength. While inventories generally are ample there is no inclination on the part of dealers to do business on anything but a ceiling price basis.

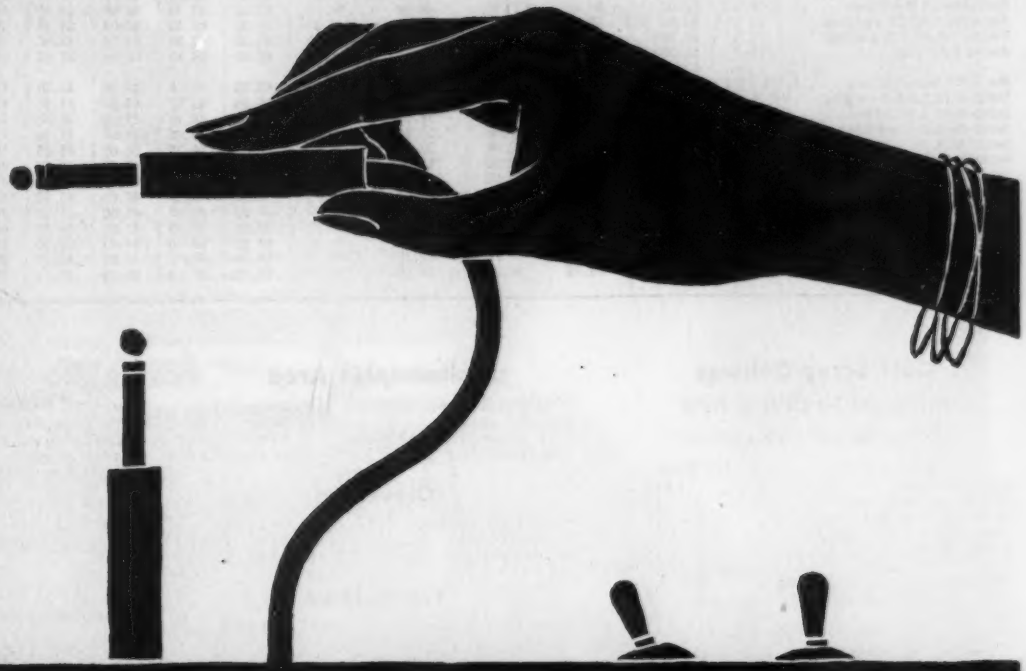
Birmingham — There was little change in the scrap situation in the Southeast this week. Heavy melting continued to move north but not in as large quantities as last week, and one southern mill went back in the market. The largest southern buyer, however, still is holding up orders. The cast scrap market continued steady, with no price changes.

Cincinnati — The market has been moving along at a steady pace for the last several weeks. District consumers are continuing to lay down scrap in a policy of building up inventories for the coming winter. Prices hold at ceiling.

Boston—Steel grades are moving along all right in this mixed-up market. Some consumers are anxious to buy, others reluctant—but they're all busy, all satisfied. There has been little change here, but motor blocks are now quoted at $32.25, up $1.25, and stove plate demand just doesn't exist.

West Coast—Scrap movement continued healthy up and down the coast spurred by below ceiling prices. Only price change of note was $1 drop in No. 1 cupola cast in San Francisco to $45. Movement of cast in Los Angeles continued surprisingly healthy at $50. On steelmaking grades consumers are frequently being offered preparation-in-transit deals but are turning them down as too costly.

your best connection for Stainless Scrap



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BUYERS OF STAINLESS SCRAP, STRAIGHT CHROMES, NICHROME, PURE NICKEL, NICKEL ALLOYS & INCONEL

Iron and Steel SCRAP PRICES

(Maximum basing point prices, per gross ton, as set by OPS in CPR 5 and amendments.)

GRADES	OPS No.	Pittsburgh	Johnstown	Brackenridge	Butler	Midland	Monessen	Sharon	Youngstown	Canton	Steubenville	Warren	Weirton	Cleveland	Buffalo	Cincinnati	Middletown	Chicago	Claymont	Coatesville	Conshohocken	Harrisburg	Phoenixville	Sparrows Pt.	Bethlehem	Ashland, Ky.	Kokomo, Ind.	Portsmouth, O.	St. Louis	Detroit	Duluth	Kansas City	Birmingham	Alabama City	Atlanta	Minneapolis	Houston	Los Angeles	Pittsburg, Cal.	Portland, Ore.	San Francisco	Seattle
Switching Charge (Dollars per gross ton) →		$0.00	.75	.63	.65	.75	.61	.75	.75	.61	.61	.75	.70	.70	.63	.65	.26	1.34	.70	.63	.28	.61	.61	.20	.62	.47	.61	.61	.51	.95	.50	.70	.63	.43	.61	.33	.67	.62	.62	.62	.62	.62
Basing Points →		Pittsburgh	Johnstown	Brackenridge	Butler	Midland	Monessen	Sharon	Youngstown	Canton	Steubenville	Warren	Weirton	Cleveland	Buffalo	Cincinnati	Middletown	Chicago	Claymont	Coatesville	Conshohocken	Harrisburg	Phoenixville	Sparrows Pt.	Bethlehem	Ashland, Ky.	Kokomo, Ind.	Portsmouth, O.	St. Louis	Detroit	Duluth	Kansas City	Birmingham	Alabama City	Atlanta	Minneapolis	Houston	Los Angeles	Pittsburg, Cal.	Portland, Ore.	San Francisco	Seattle
No. 1 bundles	1	$44.00		$44.00		$43.00		$42.50	$42.00		$41.00	$41.15	$40.00	$39.50	$39.00	$38.00	$37.00	$35.00																								
No. 1 busheling	2	44.00		44.00		43.00		42.50	42.00		41.00	41.15	40.00	39.50	39.00	38.00	37.00	35.00																								
No. 1 heavy melting	3	43.00		43.00		42.00		41.50	41.00		40.00	40.15	39.00	38.50	38.00	37.00	36.00	34.00																								
No. 2 heavy melting	4	43.00		43.00		42.00		41.50	41.00		40.00	40.15	39.00	38.50	38.00	37.00	36.00	34.00																								
No. 2 bundles	5	43.00		43.00		42.00		41.50	41.00		40.00	40.15	39.00	38.50	38.00	37.00	36.00	34.00																								
Machine shop turnings	6	34.00		34.00		33.00		32.50	32.00		31.00	31.15	30.00	29.50	29.00	28.00	27.00	25.00																								
Mixed borings and turnings	7	38.00		38.00		37.00		36.50	36.00		35.00	35.15	34.00	33.50	33.00	32.00	31.00	29.00																								
Shoveling turnings	8	38.00		38.00		37.00		36.50	36.00		35.00	35.15	34.00	33.50	33.00	32.00	31.00	29.00																								
Cast iron borings	10	38.00		38.00		37.00		36.50	36.00		35.00	35.15	34.00	33.50	33.00	32.00	31.00	29.00																								
No. 1 chemical borings	26	41.00		41.00		40.00		39.50	39.00		38.00	38.15	37.00	36.50	36.00	35.00	34.00	32.00																								
Forge crops	11	51.50		51.50		50.50		50.00	49.50		48.50	48.65	47.50	47.00	46.50	45.50	44.50	42.00																								
Bar crops and plate	12	49.00		49.00		48.00		47.50	47.00		46.00	46.15	45.00	44.50	44.00	43.00	42.00	40.00																								
Punchings and plate	14	46.50		46.50		45.50		45.00	44.50		43.50	43.65	42.50	42.00	41.50	40.50	39.50	37.00																								
Electric furnace bundles	15	46.00		46.00		45.00		44.50	44.00		43.00	43.15	42.00	41.50	41.00	40.00	39.00	37.00																								
Cut const., plate, 3 ft and less	16	47.00		47.00		46.00		45.50	45.00		44.00	44.15	43.00	42.50	42.00	41.00	40.00	38.00																								
Cut struc., plate, 2 ft and less	17	49.00		49.00		48.00		47.50	47.00		46.00	46.15	45.00	44.50	44.00	43.00	42.00	40.00																								
Cut. struc., 1 ft and less	18	50.00		50.00		49.00		48.50	48.00		47.00	47.15	46.00	45.50	45.00	44.00	43.00	41.00																								
Foundry steel, 2 ft and less	20	44.00		44.00		43.00		42.50	42.00		41.00	41.15	40.00	39.50	39.00	38.00	37.00	35.00																								
Foundry steel, 1 ft and less	21	46.00		46.00		45.00		44.50	44.00		43.00	43.15	42.00	41.50	41.00	40.00	39.00	37.00																								
Heavy trimmings	24	43.00		43.00		42.00		41.50	41.00		40.00	40.15	39.00	38.50	38.00	37.00	36.00	34.00																								
No. 1 RR heavy melting	RR 1	46.00		46.00		45.00		44.50	44.00		43.00	43.15	42.00	41.50	41.00	40.00	39.00	37.00																								
Scrap rails, random lengths	RR 14	48.00		48.00		47.00		46.50	46.00		45.00	45.15	44.00	43.50	43.00	42.00	41.00	39.00																								
Scrap rails, 3 ft and less	RR 16	51.00		51.00		50.00		49.50	49.00		48.00	48.15	47.00	46.50	46.00	45.00	44.00	42.00																								
Scrap rails, 2 ft and less	RR 17	52.00		52.00		51.00		50.50	50.00		49.00	49.15	48.00	47.50	47.00	46.00	45.00	43.00																								
Scrap rails, 18 in. and less	RR 18	54.00		54.00		53.00		52.50	52.00		51.00	51.15	50.00	49.50	49.00	48.00	47.00	45.00																								
Rerolling rails	RR 15	53.00		53.00		52.00		51.50	51.00		50.00	50.15	49.00	48.50	48.00	47.00	46.00	44.00																								
Uncut tires	RR 20	48.00		48.00		47.00		46.50	46.00		45.00	45.15	44.00	43.50	43.00	42.00	41.00	39.00																								
Cut tires	RR 21	51.00		51.00		50.00		49.50	49.00		48.00	48.15	47.00	46.50	46.00	45.00	44.00	42.00																								
Cut bolsters and side frames	RR 23	49.00		49.00		48.00		47.50	47.00		46.00	46.15	45.00	44.50	44.00	43.00	42.00	40.00																								
RR specialties	RR 24, 28, 29	51.00		51.00		50.00		49.50	49.00		48.00	48.15	47.00	46.50	46.00	45.00	44.00	42.00																								
Solid steel axles	RR 25	56.00		56.00		57.00		56.50	56.00		55.00	55.15	54.00	53.50	53.00	52.00	51.00	49.00																								
No. 3 steel wheels	RR 27	51.00		51.00		50.00		49.50	49.00		48.00	48.15	47.00	46.50	46.00	45.00	44.00	42.00																								
Unassorted	RR 35	40.00		40.00		39.00		38.50	38.00		37.00	37.15	36.00	35.50	35.00	34.00	33.00	31.00																								

Cast Scrap Ceilings

Prices set by CPR 5, OPS

(F.o.b. all shipping points)

Grades	OPS No.	
Cupola cast	1	$49.00
Charging box cast	2	47.00
Heavy breakable cast	3	45.00
Cast iron brake shoes	5	41.00
Stove plate	6	46.00
Clean auto cast	7	52.00
Unstripped motor blocks	8	43.00
Cast iron carwheels	9	47.00
Malleable	10	55.00
Drop broken mach'y cast	11	52.00

Ceiling price of clean cast iron foundry runout or prepared cupola drops is 75 pct of corresponding grade.

Under Ceiling Scrap Prices

Pittsburgh

Machine shop turn.	$32.00
Mixed bor. and ms. turns.	32.00
Cast iron borings	$35.00 to 35.50
No. 1 machinery cast	52.00
Heavy breakable cast	45.00
Malleable	55.00

Chicago

Low phos. forge crops	$50.00 to $51.00
Low phos. 3 ft and under	44.00 to 45.00
Machine shop turnings	30.00 to 31.50
Mixed borings, turnings	34.00 to 35.50
Shoveling turnings	34.00 to 35.50
Cast iron borings	34.00 to 35.50
No. 1 machinery cast	48.00 to 49.00
Cupola cast	45.00 to 46.00
Heavy breakable cast	41.00 to 42.00
Malleable	53.00 to 55.00
Stove plate	42.00 to 43.00
Clean auto cast	48.00 to 50.00
Charging box cast	44.00 to 45.00
Drop broken machy.	48.50 to 50.00
Unstripped motor blocks	38.00 to 39.00

Philadelphia Area

Clean cast chem. borings	$36.50 to $37.00
Cupola cast	47.00 to 48.00
Unstripped motor blocks	41.00 to 42.00
Charging box cast	45.00 to 46.00

Cleveland

Cast iron borings	$34.00 to $34.50
Stove plate	45.00 to 46.00
Malleable	54.00 to 55.00

Youngstown

Cast iron borings	$35.00 to $35.50

Buffalo

No. 1 machinery cast	$49.00 to $50.00
No. 1 cupola cast	46.00 to 47.00

Birmingham

Shoveling turnings	$29.00 to $31.00
Cast iron borings	29.00 to 31.00
No. 1 cupola cast	46.00 to 47.00
Stove plate	41.00 to 42.00
Charging box cast	39.00 to 40.00
Heavy breakable	37.00 to 38.00
Drop broken machinery	44.00 to 45.00
Unstripped motor blocks	37.00 to 38.00

New York

Brokers' Buying prices per gross ton, on cars:

Clean cast chem. borings	$30.00 to $30.50
No. 1 machinery cast	48.00 to 50.00
Mixed yard cast	43.00 to 44.00
Charging box cast	42.00 to 43.00
Heavy breakable cast	44.00 to 45.00
Unstripped motor blocks	37.00

Boston

Brokers' Buying prices per gross ton, on cars:

Machine shop turnings	$22.17 to $24.17
Short shoveling turnings	26.17 to 28.17
Mixed cupola cast	39.00 to 40.00
Heavy breakable cast	39.00 to 40.00
Stove plate	38.00 to 39.00
Unstripped motor blocks	32.25

Detroit

Brokers' Buying prices per gross ton, on cars:

No. 1 cupola cast	$48.00
Heavy breakable cast	$43.00 to 44.00
Stove plate	43.00 to 44.00
Cast iron brake shoes	39.00 to 40.00

Cincinnati

Drop broken cast	$51.00 to $52.00

St. Louis

Unstripped motor blocks	$38.00

San Francisco

No. 2 heavy melting	$31.00
No. 2 bundles	29.00
Machine shop turn	17.00
No. 1 cupola cast	45.00

Los Angeles

No. 2 heavy melting	$31.00
No. 2 bundles	29.00
Machine shop turn	17.00
Shoveling turnings	20.00
No. 1 cupola cast	50.00

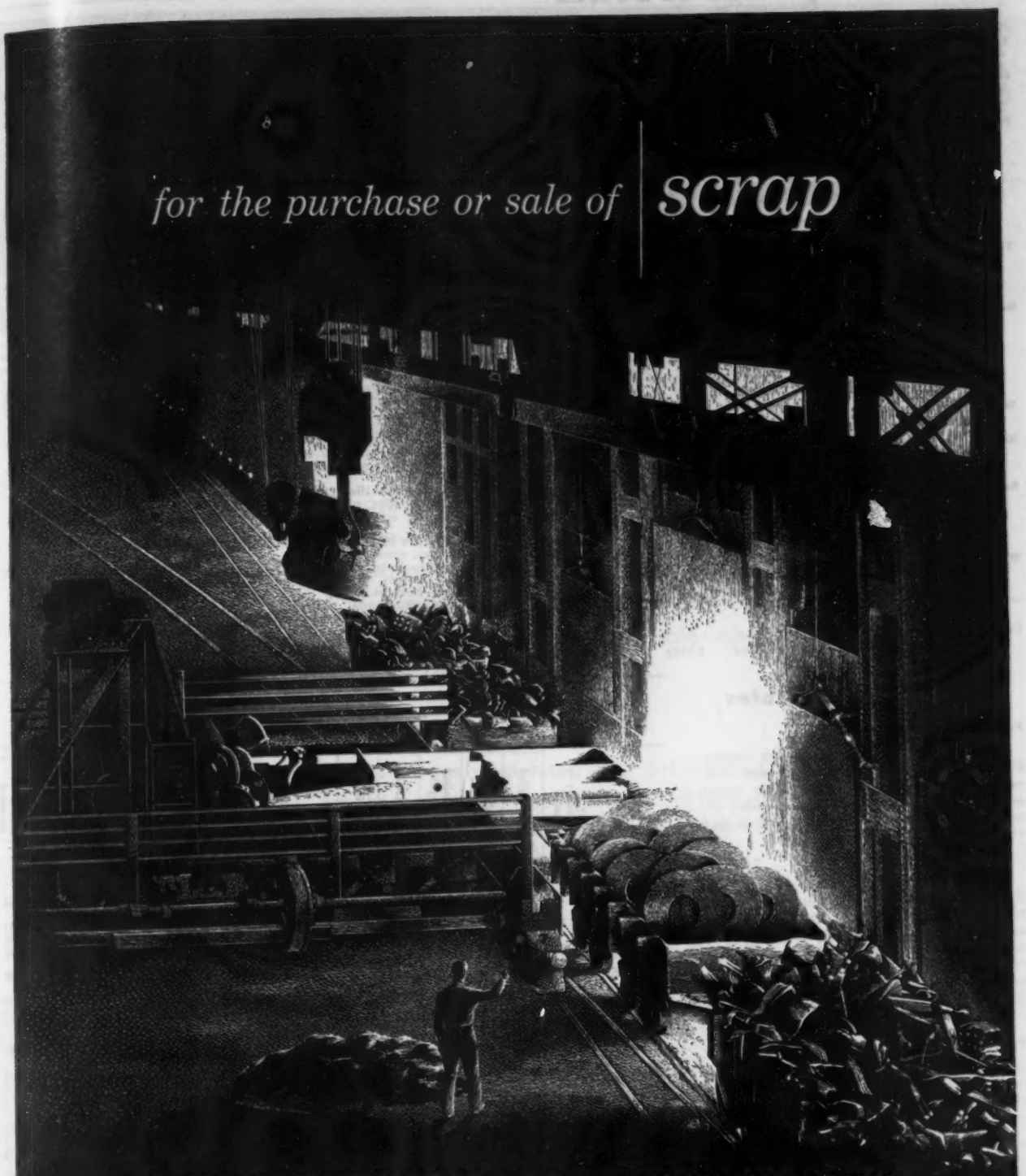
Seattle

No. 2 bundles	$29.00
No. 1 cupola cast	40.50
Heavy breakable	35.50

Hamilton, Ont.

No. 1 hvy. melting	$35.50
No. 1 bundles	35.50
No. 2 bundles	35.00
Mechanical bundles	33.50
Mixed steel scrap	31.50
Mixed bor. and turn.	32.50
Rails, remelting	35.50
Rails, rerolling	44.80
Bushelings	30.50
Bush, new fact. prep'd	33.50
Bush, new fact. unprep'd	32.50
Short steel turnings	32.50
Cast scrap	50.00

for the purchase or sale of **scrap**



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CHICAGO, ILLINOIS LEBANON, PENNA. PUEBLO, COLORADO SEATTLE, WASH.

LEADERS IN IRON AND STEEL SCRAP SINCE 1889

Comparison of Prices

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in Heavy Type; declines appear in *Italics.*

	Sept. 23 1952	Sept. 16 1952	Aug. 26 1952	Sept. 25 1951
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	3.775¢	3.775¢	3.775¢	3.60¢
Cold-rolled sheets	4.575	4.575	4.575	4.35
Galvanized sheets (10 ga.)	5.075	5.075	5.075	4.80
Hot-rolled strip	3.725	3.725	3.725	3.50
Cold-rolled strip	5.20	5.20	5.20	4.75
Plate	3.90	3.90	3.90	3.70
Plates wrought iron	9.00	9.00	9.00	7.85
Strains C-R strip (No. 302)	36.75†	36.75†	36.75†	36.75
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	$8.95	$8.95	$8.95	$8.70
Tinplate, electro (0.50 lb.)	7.65	7.65	7.65	7.40
Special coated mfg. ternes	7.75	7.75	7.75	7.50
Bars and shapes: (per pound)				
Merchant bars	3.95¢	3.95¢	3.95¢	3.70¢
Cold finished bars	4.925	4.925	4.925	4.55
Alloy bars	4.675	4.675	4.675	4.30
Structural shapes	3.85	3.85	3.85	3.65
Stainless bars (No. 302)	31.50†	31.50†	31.50†	31.50
Wrought iron bars	10.05	10.05	10.05	9.50
Wire: (per pound)				
Bright wire	5.225¢	5.225¢	5.225¢	4.85¢
Rails: (per 100 lb)				
Heavy rails	$3.775	$3.775	$3.775	$3.60
Light rails	4.25	4.25	4.25	4.00
Semifinished Steel: (per net ton)				
Rerolling billets	$59.00	$59.00	$59.00	$56.00
Slabs rerolling	59.00	59.00	59.00	56.00
Forging billets	70.50	70.50	70.50	66.00
Alloy blooms, billets, slabs	76.00	76.00	76.00	70.00
Wire Rod and Skelp: (per pound)				
Wire rods	4.325¢	4.325¢	4.325¢	4.10¢
Skelp	3.55	3.55	3.55	3.35
Composite: (per pound)				
Finished steel base price	4.376¢	4.376¢	4.376¢	4.131¢

* Revised. † Add 4.7 pct.

	Sept. 23 1952	Sept. 16 1952	Aug. 26 1952	Sept. 25 1951
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$60.69	$60.69	$60.69*	$57.77
Foundry, Valley	55.00	55.00	55.00*	52.50
Foundry, Southern, Cin'ti	58.93	58.93	58.93*	55.53
Foundry, Birmingham	51.38	51.38	51.38*	48.88
Foundry, Chicago†	55.00	55.00	55.00*	52.50
Basic, del'd Philadelphia	59.77	59.77	59.77*	56.92
Basic, Valley furnace	54.50	54.50	54.50*	52.00
Malleable, Chicago†	55.00	55.00	55.00*	52.50
Malleable, Valley	55.00	55.00	55.00*	52.50
Charcoal, Chicago	78.34	78.34	78.34*	70.56
Ferromanganese	226.25	226.25	226.25	186.25

† The switching charges for delivery to foundries in the Chicago district is $1 per ton.

‡ Average of U. S. prices quoted on Ferroalloy pages.

Composite: (per gross ton)				
Pig iron	$55.26	$55.26	$55.26*	$52.09

* Pig iron price increase retroactive to July 25, 1952.

Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$43.00*	$43.00*	$43.00*	$44.00*
No. 1 steel, Phila. area	41.50*	41.50*	41.50*	42.50*
No. 1 steel, Chicago	41.50*	41.50*	41.50*	42.50*
No. 1 bundles, Detroit	41.15*	41.15*	41.15*	41.15*
Low phos., Youngstown	46.50*	46.50*	46.50*	46.50*
No. 1 cast, Pittsburgh	49.00†	49.00†	49.00†	49.00†
No. 1 cast, Philadelphia	*47.50*	48.50	46.00	49.00†
No. 1 cast, Chicago	45.50	45.50	45.50	49.00†

* Basing pt., less broker's fee. † Shipping pt., less broker's fee.

Composite: (per gross ton)				
No. 1 heavy melting scrap	$42.00	$42.00	$42.00	$43.00
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.75	$14.75	$14.75	$14.75
Foundry coke, prompt	17.75	17.75	17.75	17.75
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	24.50	24.50	24.50	24.50
Copper, Lake, Conn.	24.625	24.625	24.625	24.625
Tin, Straits, New York	$1.21⅜	$1.21⅜	$1.21⅜	$1.08
Zinc, East St. Louis	*13.50*	14.50	14.00	17.50
Lead, St. Louis	15.80	15.80	15.80	16.80
Aluminum, virgin ingot	20.00	20.00	20.00	19.00
Nickel, electrolytic	59.58	59.58	59.58	59.58
Magnesium, ingot	24.50	24.50	24.50	24.50
Antimony, Laredo, Tex.	39.00	39.00	39.00	42.00

Composite Price Notes

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strips, representing major portion of finished steel shipment. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Starting with the issue of May 12, 1949, the weighted finished steel composite was revised for the years 1941 to date. The weights used are based on the average product shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive. The use of quarterly figures has been eliminated because it was too sensitive. (See p. 139 of May 12, 1949, issue.)

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Scrap Steel Composite

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Warehouse Price Notes

Base Quantities (Standard unless otherwise keyed): Cold finished bars; 2000 lb or over Alloy bars; 1000 to 1999 lb. All others; 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets, for quantity.

Exceptions: (1)500 to 1499 lb, (2)1500 to 3499 lb, (3)6000 lb or over.

WARE HOUSES — Base price, f.o.b., dollars per 100 lb.

Cities	City Delivery Charge	Sheets: Hot-Rolled	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (10 gage)	Strip: Hot-Rolled	Strip: Cold-Rolled	Plates Shapes: Standard Structural	Bars: Hot-Rolled	Bars: Cold-Finished	Alloy Bars: Hot-Rolled A 4615 As rolled	Alloy Bars: Hot-Rolled A 4140 Annealed	Alloy Bars: Cold-Drawn A 4615 As rolled	Alloy Bars: Cold-Drawn A 4140 Annealed
Baltimore	$.20	5.81	7.17	8.42–8.57	6.42	.....	6.30–6.47	6.41	7.18–7.43	.....	.....	.....	.....
Birmingham	.15	5.80	6.65	7.70[1]	5.80	.....	6.10	5.95	5.80	8.25–8.40	.....	.....	.....	.....
Boston	.20	6.48–6.52	7.35–7.52	8.50–8.74	6.55	8.50[1]	6.75–6.80	6.56–6.75	6.38–6.61	7.10–7.54	10.78	11.15–12.18	.....	13.18
Buffalo	.20	5.76–5.80	6.60–6.65	8.40–8.46	6.16–6.21	6.19	6.26–6.37	5.96–6.08	5.76–5.90	6.00–7.48	10.70	11.00–12.26	12.70	12.51–14.42
Chicago	.20	5.81–5.83	6.65–6.68	8.05	5.83–5.84	.....	5.95–6.02	5.95	5.83–5.91	6.56–6.92	.....	10.65	.....	12.65
Cincinnati	.15	6.13	6.72	8.52	6.21	.....	6.47	6.42	6.13	7.16	.....	12.07	.....	13.07
Cleveland	.20	5.80–5.81	6.65	8.16–8.19	6.00–6.01	.....	6.12–6.17	6.28–6.33	5.99	6.66–6.99	.....	10.79	.....	12.79
Denver		7.17	.....	.....	7.43–7.69	8.90	7.37	7.50–7.80	7.61–7.71	8.24	.....	.....	.....	.....
Detroit	.20	6.80–6.97	6.81–6.92	8.34	6.13	7.99	6.45–6.47	6.12–6.45	6.12–6.30	6.975–7.21	10.72	11.02	12.72	13.42
Houston	.20	6.74–6.79	7.78–7.79	8.68	6.61–6.75	9.80	6.63–7.07	6.66–6.79	6.82–6.98	9.00–9.62	11.90	11.90	.....	13.90
Indianapolis	del'd.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kansas City	.20	6.47	7.31	8.50–8.72	6.51	8.07	6.62–6.67	6.62	6.50	7.57	11.15–11.90	11.45–12.20	13.13–13.88	13.43–14.18
Los Angeles	.20	6.58–6.60	8.45–8.49	9.75–10.55	6.74–6.78	9.15	6.66–6.71	6.60–6.64	6.57–6.62	8.36–8.64	.....	12.05	.....	14.60
Memphis	.10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Milwaukee	.20	5.97–5.98	6.82–6.88	8.22	6.01–6.31	.....	6.12–6.17	6.12	6.00	6.83–7.10	.....	10.82	.....	12.32
New Orleans	.15	6.28	7.12	.....	6.32	.....	6.43	6.43	6.31	7.85	.....	.....	.....	.....
New York	.30	6.35–6.62	7.27–7.60	8.31[3] 8.68	6.72–7.15	9.53	6.60–7.18	6.39–6.70	6.59–6.79	7.53–8.65	10.74	11.04	12.74	13.04
Norfolk	.20	7.10	.....	.....	6.81	.....	6.64	7.25	6.44	8.45	.....	.....	.....	.....
Philadelphia	.25	6.11–6.38	7.13–7.92	8.35–8.79	6.60–7.45	.....	6.24–6.86	6.17–6.42	6.42–6.68	7.45–7.69	10.57	10.79–11.02	.....	12.79
Pittsburgh	.20	5.80–5.81	6.65	8.05–8.45	5.94–5.97	.....	5.95–6.12	5.95	5.83	6.66–6.90	.....	10.65	.....	12.65
Portland	.20	7.60	9.00	9.70	7.60	.....	7.05	7.30	7.35	9.46	.....	.....	.....	.....
Salt Lake City	.20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
San Francisco	.15	6.87–6.90	8.22	9.55–10.05	6.80–7.08	9.25–9.70	6.69	6.55–6.90	6.65–6.66	8.40–8.70	.....	12.05	.....	14.60
Seattle	.20	7.43	8.46	9.55	7.40	.....	7.19	6.83	7.40	9.31	.....	.....	.....	.....
St. Louis	.20	6.10–6.30	6.95–7.83	8.35–8.39	6.14–6.48	9.73	6.35–6.60	6.35	6.13–6.33	6.96–7.40	10.65	10.95	12.65	12.95
St. Paul	.15	6.47	7.31	8.71	6.50	.....	6.61	6.61	6.49	7.32	.....	.....	.....	.....

When You Need Cold Rolled Steel

under 24" wide, and especially 12" and narrower

You'll save by buying STRIP

COSTS EXTRA MAN-HOURS IN MAKING

Cold Rolled Steel Strip may cost a little more in cents per pound than other flat rolled low carbon steel products. *The reason is in the extra man-hours required to produce it.* These extra man-hours are expended in meeting the stricter manufacturing standards that govern strip gauge, temper and finish.

SAVES EXTRA MAN-HOURS IN USING

But if your work calls for STRIP,* then the little you pay extra for it is more than offset by the extra man-hours you save in its use. This, with the other satisfactions it offers, lets you come out ahead with lower unit costs and with more sales-appealing goods.

DEPENDABLE DAN
T.M. REG. U.S. PAT. OFF.

*STRIP must not be confused with "SH-RIP"—our new word for sheet steel that happens to be cut into strip widths, in coils or otherwise. Ask any Reliance "Dan" to explain the extra service-potential of DSC STRIP.

FOR HELPFUL ACTION CALL OUR NEAREST PLANT OR OFFICE

DETROIT STEEL CORPORATION

PRODUCERS OF
Coke and Coal Chemicals • Pig Iron • Ingots
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GENERAL OFFICES
DETROIT 9, MICHIGAN

RELIANCE STEEL DIVISION

Processors and Distributors JOB-FITTED Sheet and Strip Steel

GENERAL OFFICES — BOX 4308 — PORTER STATION, DETROIT 9, MICHIGAN

PLANTS
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EASTERN PLANT, 2061 State Street, STate 7-5781, Hamden (New Haven 7), Conn.
MIDWEST PLANT, 1601 South Wolcott Ave., CAnal 6-2442, Chicago 8, Ill.

OFFICES
COLUMBUS 12, OHIO, 1373 Grandview Ave., Kingswood 3582
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DETROIT 28, MICH., 13770 Joy Road, WEbster 3-5866
GRAND RAPIDS 2, MICH., 326 Keeler Bldg., GLendale 6-9569
INDIANAPOLIS 4, IND., 1509 Fletcher Trust Bldg., FRanklin 2333
JACKSON 10, MICHIGAN, 801 Reynolds Bldg., Jackson 4-6189
MILWAUKEE 10, WIS., 4822 W. Center St., HIltop 2-1040
NEW YORK 19, N. Y., 250 West 57th St., COlumbus 5-4870
ROCHESTER 4, N. Y., 5 St. Paul St., BAker 1061
ST. LOUIS 8, MO., 4378 Lindell Blvd., LUcas 4550
TOLEDO 4, OHIO, 2114 Ohio Bldg., GArfield 8384
WORCESTER 8, MASS., 339 Main St., Worcester 5-0686

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COLD ROLLED STEEL STRIP and FLAT WIRE
Coils . . . Cut Lengths . . . All Tempers
SHEETS
COLD ROLLED . . . HOT ROLLED . . . H. R. PICKLED . . . LONG TERNE . . . GALVANIZED
Standard and Production Sizes or Cut to Actual Working Dimensions

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STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill in cents per lb., unless otherwise noted. Extras apply.

		INGOTS		BILLETS, BLOOMS, SLABS			PIPE SKELP	PIL-ING	SHAPES STRUCTURALS		STRIP			
		Carbon Forging Net Ton	Alloy Net Ton	Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton		Sheet Steel	Carbon	Hi Str. Low Alloy	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy
EAST	Bethlehem Pa.					$76.00 *B3*			3.90 *B3*	5.80 *B3*				
	Buffalo, N. Y.			$59.00 *B3*	$70.50 *B3, R3*	$76.00 *B3, R3*		4.675 *B3*	3.90 *B3*	5.80 *B3*	3.725 *B3, R3*	5.10 *B3*	5.70 *B3*	7.90 *B3*
	Claymont Del.													
	Coatesville Pa.													
	Conshohocken Pa.				$77.50 *A2*	$83.00 *A2*					4.125 *A2*		5.90 *A2*	
	Harrisburg Pa.													
	Hartford Conn.													
	Johnstown Pa.			$59.00 *B3*	$70.50 *B3*	$76.00 *B3*			3.90 *B3*	5.80 *B3*	3.725 *B3*			
	Newark N. J.													
	New Haven Conn.											5.60 *A5* 5.85 *D1*		
	Phoenixville Pa.								6.10 *P2*					
	Putnam Conn.													
	Sparrows Pt. Md.										3.725 *B3*	5.10 *B3*	5.70 *B3*	7.90 *B3*
	Worcester Mass.													
	Trenton N. J.											6.45 *R4*		
MIDDLE WEST	Alton, Ill.										4.20 *L1*			
	Ashland, Ky.										3.725 *A7*			
	Canton-Massillon, Ohio				$70.50 *R3*	$76.00 *R3* $78.60 *T5*								
	Chicago, Sterling, Ill.			$59.00 *U1*	$70.50 *U1, R3,W8*	$76.00 *U1, R3,W8*		4.675 *U1*	3.85 *U1, W8*	5.80 *U1*	3.725 *A1,W8* 4.725 *N4*	5.35 *A1*		
	Cleveland, Ohio				$70.50 *R3*							5.10 *A5,J3*		7.45 *J3*
	Detroit, Mich.	$56.00 *R5*	$57.00 *R5*		$73.50 *R5*	$79.00 *R5*					4.025 *G3* 4.40 *M2*	5.30 *G3* 5.45 *M2* 5.60 *D1* 6.05 *D2*	6.30 *G3*	8.15 *G3*
	Duluth, Minn.													
	Gary, Ind. Harbor, Indiana			$59.00 *U1*	$70.50 *U1*	$76.00 *U1, Y1*		4.675 *I3*	3.85 *I3, U1*	5.80 *I3, U1* 6.30 *Y1*	3.725 *I3, U1, Y1*	5.35 *I3*	5.65 *I3, U1* 6.15 *Y1*	
	Granite City, Ill.													
	Kokomo, Ind.													
	Middletown, Ohio											5.10 *A7*		
	Niles, Ohio Sharon, Pa.										4.225 *S1*	5.80 *S1*	5.65 *S1*	7.30 *S1*
	Pittsburgh, Pa.	$54.00 *U1*	$57.00 *U1*	$59.00 *U1, J3*	$70.50 *U1, J3*	$76.00 *U1*	3.55 *U1* 3.65 *J3*	4.675 *U1*	3.85 *U1,J3*	5.80 *U1,J3*	3.725 *J3,A7* 3.975 *A3* 4.225 *S7*	5.10 *J3,A7* 5.45 *A3* 5.80 *B4,S7*		
	Portsmouth, Ohio													
	Weirton, Wheeling, Follansbee, W. Va.								4.10 *W3*		3.825 *W3*	5.10 *W3*	6.10 *W3*	7.95 *W3*
	Youngstown, Ohio					$76.00 *Y1, C10*	3.55 *U1, R3*			6.30 *Y1*	3.725 *U1, Y1,R3*	5.10 *R3, Y1* 5.70 *C5* 5.80 *B4*	5.65 *R3, U1* 6.15 *Y1*	7.30 *R3* 7.80 *Y1*
WEST	Fontana, Cal.	$81.00 *K1*	$83.00 *K1*	$78.00 *K1*	$89.50 *K1*	$95.00 *K1*			4.45 *K1*	6.40 *K1*	4.975 *K1*	6.75 *K1*	6.55 *K1*	
	Geneva, Utah				$70.50 *C7*				3.85 *C7*	5.80 *C7*				
	Kansas City, Mo.								4.45 *S2*		4.325 *S2*			
	Los Angeles, Torrance, Cal.				$89.50 *B2*	$96.00 *B2*			4.45 *C7, B2*	6.35 *B2*	4.475 *C7,B2*	6.85 *C1*	6.40 *B2*	
	Minnequa, Colo.								4.30 *C6*		4.775 *C6*			
	San Francisco, Niles, Pittsburg, Cal.				$89.50 *B2*				4.40 *B2* 4.56 *P9*	6.30 *B2*	4.475 *C7,B2*		6.40 *B2*	
	Seattle, Wash.				$89.50 *B2*				4.50 *B2*	6.40 *B2*	4.725 *B2*		6.65 *B2*	
SOUTH	Atlanta, Ga.										4.275 *A8*			
	Birmingham, Ala. Alabama City, Ala.			$59.00 *T2*	$70.50 *T2*				3.85 *T2,R3*	5.80 *T2*	3.725 *T2,R3*			
	Houston, Texas		$65.00 *S2*		$78.50 *S2*	$84.00 *S2*			4.25 *S2*		4.125 *S2*			

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

IRON AGE

STEEL PRICES

SHEETS									WIRE ROD	TINPLATE†		BLACK PLATE	
Hot-rolled 18 ga. & hvyr.	Cold-rolled	Galvanized 10 ga.	Enameling 12 ga.	Long Terne 10 ga.	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.	Hot-rolled 19 ga.		Cokes* 1.25-lb. base box	Electro* 0.25-lb. base box	Hollowware Enameling 29 ga.	
													Bethlehem, Pa.
3.775 *B3*	4.575 *B3*				5.675 *B3*	6.925 *B3*							Buffalo, N. Y.
										† Special coated mfg terms deduct 95¢ from 1.25-lb coke base box price. Can-making quality blackplate 55 to 128 lb. deduct $2.20 from 1.25-lb coke base box. * COKES: 1.50-lb, add 25¢. ELECTRO: 0.50-lb add 25¢; 0.75-lb, add 65¢.			Clayment, Del.
													Conshohocken, Pa.
4.175 *A2*					5.925 *A2*								Harrisburg, Pa.
													Hartford, Conn.
													Johnstown, Pa.
									4.325 *B3*				Newark, N. J.
													New Haven, Conn.
													Phoenixville, Pa.
													Putnam, Conn.
3.775 *B3*	4.575 *B3*	5.075 *B3*			5.675 *B3*	6.925 *B3*	7.775 *B3*		4.425 *B3*	$8.80 *B3*	$7.50 *B3*		Sparrows Pt., Md.
									4.625 *A5*				Worcester, Mass.
									4.425 *R4*				Trenton, N. J.
									4.70 *LI*				Alton, Ill.
3.775 *A7*		5.075 *A7*	4.925 *A7*										Ashland, Ky.
		5.075 *R3*											Canton-Massillon, Ohio
3.775 *WR*					5.675 *UI*				4.325 *A5,N4 R3*				Chicago, Sterling, Ill.
3.775 *R3, J3*	4.575 *R3, J3*		4.925 *R3*		5.675 *R3, J3*	6.925 *R3, J3*			4.325 *A5*				Cleveland, Ohio
3.975 *G3*	4.775 *G3*				6.225 *G3*	7.475 *G3*							Detroit, Mich.
													Duluth, Minn.
3.775 *I3, UI, YI*	4.575 *I3, UI, YI*	5.075 *I3, UI*	4.925 *UI*	5.475 *UI*	5.675 *I3, UI* 6.175 *YI*	6.925 *I3, UI* 7.425 *YI*			4.325 *YI*	$8.70 *UI, I3, YI*	$7.40 *UI, I3*	6.10 *UI, YI*	Gary, Ind. Harbor, Indiana
4.30 *G2*	5.275 *G2*	5.50 *G2*	5.625 *G2*								$7.60 *G2*	6.30 *G2*	Granite City, Ill.
		5.475 *C9*											Kokomo, Ind.
	4.575 *A7*		4.925 *A7*	5.475 *A7*									Middletown, Ohio
4.175 *SI*					5.675 *SI*						$7.40 *R3*		Niles, Ohio Sharon, Pa.
3.775 *UI, J3,A7* 3.925 *A3*	4.575 *UI, J3,A7*	5.075 *UI*	4.925 *UI*		5.675 *UI, J3*	6.925 *UI, J3*	7.625 *UI*		4.325 *A5*	$8.70 *UI, J3*	$7.40 *UI, J3*	6.10 *UI*	Pittsburgh, Pa.
									4.525 *P7*				Portsmouth, Ohio
3.775 *W3, W5*	4.575 *W3, W5*	5.075 *W3, W5*		5.475 *W3, W5*	6.025 *W3*	7.275 *W3*				$8.70 *W3, W5*	$7.40 *W3, W5*	6.35 *W5*	Weirton, Wheeling, Follansbee, W. Va.
3.775 *UI, R3, YI*	4.575 *R3, YI*	5.775 *RI*	4.925 *YI*	6.85 *E2*	5.675 *R3, UI* 6.175 *YI*	6.925 *R3* 7.425 *YI*		5.65 *E2* 5.825 *RI*	4.325 *YI*	$8.70 *R3*			Youngstown, Ohio
4.725 *KI*	5.525 *KI*				6.625 *KI*	7.875 *KI*			5.125 *KI*				Fontana, Cal.
3.875 *C7*													Geneva, Utah
													Kansas City, Mo.
4.475 *C7*		5.325 *C7*						5.575 *C7*	5.125 *C7,B2*				Los Angeles, Torrance, Cal.
									4.575 *C6*				Minnequa, Colo.
4.475 *C7*	5.525 *C7*	5.325 *C7*							4.975 *C7*	$9.45 *C7*	$8.15 *C7*		San Francisco, Niles, Pittsburg, Cal.
													Seattle, Wash.
													Atlanta, Ga.
3.775 *T2, R3*	4.575 *T2*	5.075 *T2, R3*			5.675 *T2*			4.925 *R3*	4.325 *T2, R3*	$8.80 *T2*	$7.50 *T2*		Birmingham, Ala. Alabama City, Ala.
									4.725 *S2*				Houston, Tex.

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BARS						PLATES				WIRE
		Carbon Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfg'rs Bright
EAST	Bethlehem, Pa.				4.675 *B3*	6.00 *B3*	5.925 *B3*					
	Buffalo, N. Y.	3.95 *B3,R3*	3.95 *B3,R3*	4.975 *B5*	4.675 *B3,R3*	6.00 *B3,B5*	5.925 *B3*	3.90 *B3*			5.95 *B3*	
	Claymont, Del.							4.35 *C4*		5.35 *C4*		
	Coatesville, Pa.							4.35 *L4*		5.75 *L4*		
	Conshohocken, Pa.							4.35 *A2*	4.95 *A2*		6.20 *A2*	
	Harrisburg, Pa.							6.50 *C3*	6.50 *C3*			
	Hartford, Conn.			5.475 *R3*		6.45 *R3*						
	Johnstown, Pa.	3.95 *B3*	3.95 *B3*		4.675 *B3*		5.925 *B3*	3.90 *B3*		5.25 *B3*	5.95 *B3*	5.225 *B3*
	Newark, N. J.			5.375 *W10*		6.35 *W10*						
	New Haven, Conn.											
	Phoenixville, Pa.											
	Putnam, Conn.			5.475 *W10*								
	Sparrows Point, Md.		3.95 *B3*					3.90 *B3*		5.25 *B3*	5.95 *B3*	5.325 *B3*
	Worcester, Mass.					6.35 *A5*						5.525 *A5*
	Trenton, N. J.											
MIDDLE WEST	Alton, Ill.	4.50 *L1*										5.45 *L1*
	Ashland, Ky.							3.90 *A7*				
	Canton-Massillon	3.95 *R3*		4.925 *R2,R3*	4.675 *R3* 4.72 *T5*	5.99 *T5* 6.00 *R2,R3*						
	Chicago, Sterling, Ill.	3.95 *U,W8, R3* 4.55 *N4*	3.95 *R3* 4.70 *N4*	4.925 *A5,B5 W8,W10*	4.675 *R3, U1, W8*	6.00 *B5,L2, R3,W8,W10* 6.05 *A5*		3.90 *U1, W8*	4.95 *U1*	5.25 *U1*	5.95 *U1*	5.225 *A5, N4,R3* 5.325 *K2* 5.475 *W7*
	Cleveland, Ohio	3.95 *R3*	3.95 *R3*	4.925 *A5,C13*		6.00 *C13* 6.05 *A5*	5.925 *R3*	3.90 *R3, J3*	4.95 *J3*		5.95 *R3, J3*	5.225 *A5, C13, R3*
	Detroit, Mich.	4.10 *R5* 4.30 *G3*		5.075 *R5,P8* 5.175 *P3*	4.825 *R5* 5.025 *G3*	6.15 *R5,P8* 6.20 *P3*	6.675 *G3*	4.45 *G3*			6.90 *G3*	
	Duluth, Minn.											5.225 *A5*
	Gary Ind. Harbor, Indiana	3.95 *I3, U1, Y1*	3.95 *I3, U1, Y1*	4.925 *L2, M5,R3*	4.675 *I3, U1, Y1*	6.00 *L2,M5, R3,R5*	5.925 *I3, U1,* 6.425 *Y1*	3.90 *I3, U1, Y1*	4.95 *I3*	5.25 *U1*	5.95 *I3, U1* 6.45 *Y1*	5.325 *M4*
	Granite City, Ill.							4.60 *G2*				
	Kokomo, Ind.											5.325 *C9*
	Middletown, Ohio											
	Niles, Ohio Sharon, Pa.							4.15 *S1*		5.70 *S1*	5.95 *S1*	
	Pittsburgh, Pa.	3.95 *U1, J3*	3.95 *U1, J3*	4.925 *A5, J3, W10,R3,C8*	4.675 *U1, J3*	6.00 *W10,C8* 6.05 *A5*	5.925 *U1, J3*	3.90 *U1, J3*	4.95 *U1, J3*	5.25 *U1, J3*	5.95 *U1, J3*	5.225 *A5, J3*
	Portsmouth, Ohio											5.625 *P7*
	Weirton, Wheeling, Follansbee, W. Va.	4.10 *W3*						3.90 *W5* 4.20 *W3*				
	Youngstown, Ohio	3.95 *U1, Y1, R3*	3.95 *U1, Y1, R3*	4.925 *Y1*	4.675 *U1,C10, Y1*	6.00 *C10, Y1*	5.925 *U1* 6.425 *Y1*	3.90 *U1, Y1, R3*			5.95 *R3* 6.45 *Y1*	5.225 *Y1*
WEST	Fontana, Cal.	4.65 *K1*	4.65 *K1*		5.725 *K1*		6.975 *K1*	4.50 *K1*		6.20 *K1*	6.55 *K1*	
	Geneva, Utah							3.90 *C7*			5.95 *C7*	
	Kansas City, Mo.	4.55 *S2*	4.55 *S2*		5.275 *S2*							5.525 *S2*
	Los Angeles, Torrance, Cal.	4.65 *C7,B2*	4.65 *C7,B2*	6.375 *R3*	5.725 *B2*		6.625 *B2*					6.175 *C7,B2*
	Minnequa, Colo.	4.40 *C6*	4.75 *C6*					4.70 *C6*				5.475 *C6*
	San Francisco, Niles, Pittsburg, Cal.	4.65 *C7,P9* 4.70 *B2*	4.65 *C7,P9* 4.70 *B2*				6.675 *B2*					6.175 *C6, C7*
	Seattle, Wash.	4.70 *B2*	4.70 *B2*				6.675 *B2*	4.80 *B2*			6.85 *B2*	
SOUTH	Atlanta, Ga.	4.50 *A8*	4.50 *A8*									5.475 *A8*
	Birmingham, Ala. Alabama City, Ala.	3.95 *T2,R3*	3.95 *T2,R3*				5.925 *T2*	3.90 *T2 R3*			5.95 *T2*	5.225 *T2, R3*
	Houston, Tex.	4.35 *S2*	4.35 *S2*		5.075 *S2*			4.30 *S2*				5.625 *S2*

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Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angell Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, O.
A8 Atlantic Steel Co., Atlanta, Ga.

B1 Babcock & Wilcox Tube Co., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin Inc., Harvey, Ill.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C3 Central Iron & Steel Co., Harrisburg, Pa.
C4 Claymont Products Dept., Claymont, Del.
C5 Cold Metal Products Co., Youngstown
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia-Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Glassport, Pa.
C11 Crucible Steel Co. of America, New York
C12 Cumberland Steel Co., Cumberland, Md.
C13 Cuyahoga Steel & Wire Co., Cleveland

D1 Detroit Steel Corp., Detroit
D2 Detroit Tube & Steel Div., Detroit
D3 Driver Harris Co., Harrison, N. J.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire Steel Co., Mansfield, O.

F1 Firth Sterling Steel & Carbide Corp., McKeesport, Pa
F2 Fitzsimmons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G1 Globe Iron Co., Jackson, O.
G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago

K1 Kaiser Steel Corp., Fontana, Cal.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon Pa.
M4 Mid-States Steel & Wire Co., Crawfordsville, Ind.
M5 Monarch Steel Co., Inc., Hammond, Ind.
M6 Mystic Iron Works, Everett, Mass.

N1 National Supply Co., Pittsburgh
N2 National Tube Co., Pittsburgh
N3 Niles Rolling Mills Co., Niles, O.
N4 Northwestern Steel & Wire Co., Sterling, Ill.

O1 Oliver Iron & Steel Co., Pittsburgh

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.

R1 Reeves Steel & Mfg. Co., Dover, O.
R2 Reliance Div. Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co. (John A.), Trenton, N. J.
R5 Rotary Electric Steel Co., Detroit

S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Corp., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw & Steel Co., Fitchburg, Mass.
S5 Sloss Sheffield Steel & Iron Co., Birmingham
S6 Standard Forging Corp., Chicago
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Stee Corp., Carnegie, Pa.
S10 Sweet's Steel Co., Williamsport, Pa.
S11 Seidelhuber Steel Rolling Mills, Seattle

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Birmingham
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Steel Co., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T6 Tremont Nail Co., Wareham, Mass.

U1 United States Steel Co., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago
W8 Wisconsin Steel Co., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh

Y1 Youngstown Sheet & Tube Co., Youngstown

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard & Coated Nailed Col	Woven Wire Fence 9-15½ ga. Col	Fence Posts Col	Single Loop Bale Ties Col	Twisted Barbless Wire Col	Galv. Barbed Wire Col	Merch. Wire Ann'ld ¢/lb.	Merch. Wire Gal.* ¢/lb.
Alabama City *R3*	118	135	...	132	...	144	6.075	6.325
Aliquippa, Pa. *J3*	127	141	...	...	...	148	6.075	6.525
Atlanta *A8*	130	140	...	135	...	149	6.325	6.675
Bartonville *K2*	127	138	140	132	147	147	6.075	6.45
Buffalo *W6*	...	...	...	...	...	...	...	...
Cleveland *A6*	...	...	...	...	...	...	...	...
Cleveland *A5*	...	...	...	...	...	...	6.075	6.225
Crawfrdsvl. *M4*	130	140	...	134	...	149	6.175	6.55
Donora, Pa. *A5*	127	133	...	132	...	142	6.075	6.225
Duluth *A5*	127	133	...	132	...	142	6.075	6.225
Fairfield, Ala. *T2*	127	133	...	132	...	142	6.075	6.225
Houston *S2*	135	147	...	...	...	156	6.475	6.925
Johnstn., Pa. *B3*	127	...	148	...	149	...	...	6.575
Joliet, Ill. *A5*	127	133	...	132	...	142	6.075	6.225
Kokomo, Ind. *C9*	...	...	142	...	...	...	6.175	6.425
Los Angeles *B2*	...	...	...	...	...	...	7.025	...
Kansas City *S2*	139	...	...	144	...	160	6.675	7.125
Minnequa *C6*	123	146	138	137	...	153	6.325	6.70
Monessen *P6*	...	...	...	...	...	...	...	...
Moline, Ill. *R3*	...	...	136	...	...	...	...	...
Pittsburg, Cal. *C7*	146	156	...	156	162	162	7.025	7.125
Portsmouth *P7*	132	...	...	...	...	...	6.47	...
Rankin, Pa. *A5*	127	133	...	...	...	142	6.075	6.225
So. Chicago *R3*	118	135	140	132	...	144	6.075	6.325
S. San Fran. *C6*	...	...	...	156	...	167	7.025	7.40
Sparrows Pt. *B3*	129	...	...	134	151	...	...	6.675
Sterling, Ill. *N4*	127	138	...	132	147	...	6.075	6.45
Struthers, O. *Y1*	...	...	...	...	...	...	6.075	6.475
Terrance, Cal. *C7*	147	...	...	...	...	...	7.025	...
Worcester *A5*	133	...	...	...	...	...	6.375	6.525
Williamsport, Pa. *S10*	...	...	...	...	...	...	...	...

Cut Nails, carloads, base $7.80 per 100 lb. (less 20¢ to jobbers), at Conshohocken, Pa., (*A2*), Wheeling, W. Va., (*W5*), $7.80.

* Alabama City and So. Chicago don't include zinc extra Struthers based on 15¢ zinc.

† Alabama City, So. Chicago, and Minnequa, add 45¢ per 100 lb.

STAINLESS STEELS

Base price, cents per lb, f.o.b. mill. Add 4.7 pct

Product	301	302	303	304	316	321	347	410	416	430
Ingots, rerolling	14.25	15.25	16.75	16.25	24.75	20.00	21.75	12.75	14.75	13.00
Slabs, billets, rerolling	18.50	20.00	22.00	21.00	32.25	26.25	28.50	16.50	20.00	16.75
Forg. discs, die blocks, rings	34.00	34.25	36.75	35.75	53.00	40.25	44.75	28.00	28.50	28.50
Billets, forging	26.25	26.50	28.50	27.75	41.50	31.25	35.00	21.50	22.00	22.00
Bars, wires, structurals	31.25	31.50	34.00	33.00	49.25	37.00	41.50	25.75	26.25	26.25
Plates	33.00	33.25	35.25	35.25	52.00	40.75	45.25	27.00	27.50	27.50
Sheets	41.00	41.25	43.25	43.25	57.00	49.25	53.75	36.50	37.00	39.00
Strip, hot-rolled	26.50	28.25	32.50	30.25	48.75	37.00	41.25	23.50	30.25	24.00
Strip, cold-rolled	34.00	36.75	40.25	38.75	59.00	48.25	52.25	30.50	37.00	31.00

STAINLESS STEEL PRODUCING POINTS—*Sheets*: Midland, Pa., *C11*; Brackenridge, Pa., *A3*; Butler, Pa., *A7*; McKeesport, Pa., *U1*; Washington, Pa., *W2*; (type 316 add 4.5¢) *J2*; Baltimore, *E1*; Middletown, O., *A7*; Massillon, O., *R3*; Gary, *U1*; Bridgeville, Pa., *U2*; New Castle, Ind., *I2*; Ft. Wayne, *J4*; Lockport, N. Y., *R4*.

Strip: Midland, Pa., *C11*; Cleveland, *A5*; Carnegie, Pa., *S9*; McKeesport, Pa., *F1*; Reading, Pa., *C2*; Washington, Pa., *W2*; (type 316 add 4.5¢); W. Leechburg, Pa., *A3*; Bridgeville, Pa., *U2*; Detroit, *M2*; Canton-Massillon, O., *R3*; Middletown, O., *A7*; Harrison, N. J., *D3*; Youngstown, *C5*; Lockport, N. Y., *S4*; Sharon, Pa., *S1* (type 301 add ½¢); Butler, Pa., *A7*; Wallingford, Conn., *W1*.

Bars: Baltimore, *A7*; Duquesne, Pa., *U1*; Munhall, Pa., *U1*; Reading, Pa., *C2*; Titusville, Pa., *U2*; Washington, Pa. *J2*; McKeesport, Pa., *U1*, *F1*; Bridgeville, Pa., *U2*; Dunkirk, N. Y., *A3*; Massillon, O., *R3*; Chicago, *U1*; Syracuse, N. Y *C11*; Watervliet, N. Y., *A3*; Waukegan, *A5*; Lockport, N. Y., *S4*; Canton, O., *T5*; Ft. Wayne, *J4*.

Wire: Waukegan, *A5*; Massillon, O., *R3*; McKeesport, Pa., *F1*; Ft. Wayne, *J4*; Harrison, N. J., *D3*; Baltimore, *A7* Dunkirk, *A3*; Monessen, *P1*; Syracuse, *C11*; Bridgeville, *U2*.

Structurals: Baltimore, *A7*; Massillon, O., *R3*; Chicago, Ill., *J4*; Watervliet, N. Y., *A3*; Syracuse, *C11*.

Plates: Brackenridge, Pa., *A3* (type 416 add ½¢); Butler, Pa., *A7*; Chicago, *U1*; Munhall, Pa., *U1*; Midland, Pa., *C11*; New Castle, Ind., *I2*; Lockport, N. Y., *S4*; Middletown, *A7*; Washington, Pa., *J2*; Cleveland, Massillon, *R3*.

Forged discs, die blocks, rings: Pittsburgh, *C11*; Syracuse, *C11*; Ferndale, Mich., *A3*; Washington, Pa., *J2*.

Forging billets: Midland, Pa., *C11*; Baltimore, *A7*; Washington, Pa., *J2*; McKeesport, *F1*; Massillon, Canton, O., *R3*; Watervliet, *A3*; Pittsburgh, Chicago, *U1*; Syracuse, *C11*.

ALLEGHENY LUDLUM—Slightly higher on Type 301; slightly lower on others in 300 series.

WASHINGTON STEEL—Slightly lower on 300 series except where noted.

PIPE AND TUBING

Base discounts f.o.b. mills. Base price about $280 per net ton.

	BUTTWELD														SEAMLESS					
	½ in.		¾ in.		1 in.		1¼ in.		1½ in.		2 in.		2½–3 in.		2 in.		2½–3 in.		3½–4 in.	
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
STANDARD T. & C.																				
Sparrows Pt. *B3*	30.5	8.25	33.5	12.25	35.5	15.75	36.5	16.25	37.0	17.25	37.5	17.75	38.0	18.25	.....	.....	.....	.....	.....	.....
Youngstown *R3*	32.5	10.25	35.5	14.25	38.0	17.75	39.4	18.25	39.0	19.25	39.5	19.75	40.0	20.25	.....	.....	.....	.....	.....	.....
Fontana *K1*	21.0	+1.25	24.0	2.75	26.5	6.25	27.0	6.75	27.5	7.75	28.0	8.25	28.5	8.75	.....	.....	.....	.....	.....	.....
Pittsburgh *J3*	32.5	10.25	35.5	13.25	38.0	15.75	38.5	16.75	39.0	17.25	39.5	17.75	40.0	18.75	24.0	2.25	27.0	5.75	29.0	7.75
Pittsburgh *N2*	32.5	10.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25	24.0	3.75	27.0	6.75	29.0	8.75
Alton, Ill. *L1*	31.5	9.25	34.5	13.25	37.0	16.75	37.5	17.25	38.0	18.25	38.5	18.75	39.0	19.25	.....	.....	.....	.....	.....	.....
Sharon *M3*	32.5	9.25	35.5	13.25	38.0	16.25	38.5	16.75	39.0	17.25	39.5	17.75	40.0	18.25	.....	.....	.....	.....	.....	.....
Pittsburgh *N1*	32.5	10.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25	24.0	.....	27.0	.....	29.0	.....
Wheeling *W5*	32.5	10.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25	.....	.....	.....	.....	.....	.....
Wheatland *W4*	32.5	10.25	35.5	13.25	38.0	15.75	38.5	16.75	39.0	17.25	39.5	17.75	40.0	18.75	.....	.....	.....	.....	.....	.....
Youngstown *Y1*	32.5	10.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25	24.0	3.75	27.0	6.75	29.0	8.75
Indiana Harbor *Y1*	31.5	9.25	34.5	13.25	37.0	16.75	37.5	17.25	38.0	18.25	38.5	18.75	39.0	19.25	.....	.....	.....	.....	.....	.....
Lorain *N2*	32.5	15.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25	24.0	3.75	27.0	6.75	29.0	8.75
EXTRA STRONG PLAIN ENDS																				
Sparrows Pt. *B3*	30.25	9 5	34.25	13.5	36.25	17.0	36.75	17.5	37.25	18.5	37.75	19.0	38.25	19.5	.....	.....	.....	.....	.....	.....
Youngstown *R3*	32.25	11.5	36.25	15.5	38.25	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	21.5	.....	.....	.....	.....	.....	.....
Fontana *K1*	20.75	.....	24.75	.....	26.75	.....	27.25	.....	27.75	.....	28.25	.....	28.75	.....	.....	.....	.....	.....	.....	.....
Pittsburgh *J3*	32.25	10.0	36.25	14.0	38.25	16.0	38.75	17.0	39.25	17.5	39.75	18.0	40.25	19.0	23.75	2.0	27.75	6.5	31.25	10.0
Pittsburgh *N2*	32.25	11.5	36.25	15.5	38.25	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	21.5	23.75	4.5	27.75	8.5	31.25	12.0
Alton, Ill. *L1*	29.25	8.5	33.25	12.5	35.25	16.0	35.75	16.5	36.25	17.5	36.75	18.0	37.25	18.5	.....	.....	.....	.....	.....	.....
Sharon *M3*	32.25	10.5	36.25	14.5	38.25	17.5	38.75	18.0	39.25	18.5	39.75	19.0	40.25	19.5	.....	.....	.....	.....	.....	.....
Pittsburgh *N1*	32.25	11.5	36.25	15.5	38.25	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	21.5	23.75	.....	27.75	.....	31.25	.....
Wheeling *W5*	32.25	11.5	36.25	15.5	38.25	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	21.5	.....	.....	.....	.....	.....	.....
Wheatland *W4*	32.25	10.0	36.25	14.0	38.25	16.0	38.75	17.0	39.25	17.5	39.75	18.0	40.25	19.0	.....	.....	.....	.....	.....	.....
Youngstown *Y1*	32.25	11.5	36.25	15.5	37.75	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	22.5	23.75	4.5	27.75	8.5	31.25	12.0
Indiana Harbor *Y1*	31.25	10.5	35.25	14.5	37.25	17.5	37.75	18.5	38.25	19.5	38.75	20.0	39.25	20.5	.....	.....	.....	.....	.....	.....
Lorain *N2*	32.25	11.5	36.25	15.5	38.25	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	21.5	23.75	4.5	27.75	8.5	31.25	12.0

Galvanized discounts based on zinc, at 17¢ per lb, East St. Louis. For each 1¢ change in zinc, discounts vary as follows: ½ in., ¾ in., and 1 in., 1 pt.; 1¼ in., 1½ in., 2 in., ¾ pt.; 2½ in., 3 in., ½ pt. Calculate discounts on even cents per lb of zinc, i.e., if zinc is 16.51¢ to 17.50¢ per lb, use 17¢. Jones & Laughlin discounts apply only when zinc price changes 1¢.
Threads only buttweld and seamless, 1 pt. higher discount. Plain ends, buttweld and seamless, 3 in. and under, 3½ pts. higher discount. Buttweld jobbers' discount, 5 pct. St. Louis zinc price now 14 5¢.

COKE

Furnace, beehive (f.o.b. oven)	Net-Ton
Connellsville, Pa.	$14.50 to $15.00
Foundry, beehive (f.o.b. oven)	
Connellsville, Pa.	$17.50 to $18.00
Foundry, oven coke	
Buffalo, del'd	$26.58
Chicago, f.o.b.	23.00
Detroit, f.o.b.	24.00
New England, del'd	24.80
Seaboard, N. J., f.o.b.	22.75
Philadelphia, f.o.b.	22.70
Swedeland, Pa., f.o.b.	22.60
Painesville, Ohio, f.o.b.	24.00
Erie, Pa., f.o.b.	23.50
Cleveland, del'd	25.72
Cincinnati, del'd	25.06
St. Paul, f.o.b.	22.50
St. Louis	25.40
Birmingham, del'd	21.69
Neville Island	23.00

ELECTRICAL SHEETS

22 Ga. H-R cut length F.o.b. Mill Cents Per Lb	Armature	Elec.	Motor	Dynamo	Transf. 72	Transf. 65	Transf. 58
Beech Bottom *W5*	.....	7.85	9.10	9.90	10.45	11.00	11.70
Brackenridge *A3*	7.35	7.85	9.10	9.90	10.45	11.00	11.70
Granite City *G2*	.....	8.55	9.80	.....	.....	.....	.....
Ind. Harbor *I3*	7.35	7.85	9.10	.....	.....	.....	.....
Mansfield *E2*	7.35	7.85	9.10	9.90	.....	.....	.....
Niles, O. *N3*	7.35	7.85	.....	.....	.....	.....	.....
Vandergrift *U1*	7.35	7.85	9.10	9.90	10.45	11.00	11.70
Warren, O. *R3*	7.35	7.85	9.10	.....	.....	.....	.....
Zanesville *A7*	7.35	7.85	9.10	9.90	10.45	11.00	11.70

CAST IRON WATER PIPE

	Per Net Ton
6 to 24-in., del'd Chicago	$105.30 to $108.80
6 to 24-in., del'd N.Y.	108.50 to 109.50
6 to 24-in., Birmingham	91.50 to 96.00
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipments; rail and water shipments less	$123.00 to $136.00

Class "A" and gas pipe, $5 extra; 4-in. pipe is $5 a ton above 6-in.

BOILER TUBES

$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size		Seamless		Elec. Weld	
	OD-In.	B.W. Ga.	H.R.	C.D.	H.R.	C.D.
Babcock & Wilcox	2	13	23.93	28.14	23.19	27.28
	2½	12	32.17	37.83	31.19	36.67
	3	12	35.78	42.11	34.69	40.82
	3½	11	44.72	52.65	43.36	51.05
	4	10	55.52	65.31	53.83	63.32
National Tube	2	13	22.81	27.94	22.23	.....
	2½	12	31.28	38.31	30.51	.....
	3	12	35.87	43.93	34.98	.....
	3½	11	42.56	52.12	.....	.....
	4	10	54.02	66.16	.....	.....
Pittsburgh Steel	2	13	.....	28.58	.....	.....
	2½	12	32.16	39.19	.....	.....
	3	12	36.87	44.93	.....	.....
	3½	11	43.76	53.32	.....	.....
	4	10	55.54	67.68	.....	.....

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges

Producing Point	Basic	Foundry	Malleable	Bessemer	Low Phos.	Bi Furnace Silvery	Low Phos. Charcoal
Bethlehem *B3*	56.50	57.00	57.50	58.00	.....	.....	.....
Birmingham *R3*	50.88	51.38	.....	.....	.....	.....	.....
Birmingham *W9*	50.88	51.38	.....	.....	.....	.....	.....
Birmingham *S5*	50.88	51.38	.....	.....	.....	.....	.....
Buffalo *R3*	54.50	55.00	55.50	.....	.....	.....	.....
Buffalo *H1*	54.50	55.00	55.50	.....	.....	66.75	.....
Buffalo *W6*	54.50	55.00	55.50	.....	.....	.....	.....
Chicago *I4*	54.50	55.00	55.00	55.50	.....	.....	.....
Cleveland *A5*	54.50	55.00	55.00	55.50	59.50	.....	.....
Cleveland *R3*	54.50	55.00	55.00	.....	.....	.....	.....
Daingerfield, Tex. *L3*	50.50	51.00	51.00	.....	.....	.....	.....
Duluth *I4*	54.50	55.00	55.00	55.50	.....	.....	.....
Erie *I4*	54.50	55.00	55.00	55.50	.....	.....	.....
Everett, Mass. *M6*	.....	59.75	60.25	.....	.....	.....	.....
Fontana *K1*	60.50	61.00	.....	.....	.....	.....	.....
Geneva, Utah *C7*	54.50	55.00	.....	.....	.....	.....	.....
Granite City, Ill. *K3*	56.40	56.90	57.40	.....	.....	.....	.....
Hubbard, Ohio *Y1*	54.50	55.00	55.00	.....	.....	.....	.....
Jackson, Ohio *J1,G1*	.....	.....	.....	.....	.....	65.50	.....
Lyle, Tenn. *T3*	.....	.....	.....	.....	.....	.....	68.50
Minnequa *C6*	56.50	57.50	57.50	.....	.....	.....	.....
Monessen *P6*	56.50	.....	.....	.....	.....	.....	.....
Neville Island *P4*	54.50	55.00	55.00	55.50	.....	.....	.....
Pittsburgh *U1*	54.50	.....	.....	55.50	.....	.....	.....
Sharpsville *S3*	54.50	55.00	55.00	55.50	.....	.....	.....
Steelton *B3*	56.50	57.00	57.50	58.00	62.50	.....	.....
Swedeland *A2*	58.50	59.00	59.50	60.00	.....	.....	.....
Toledo *I4*	54.50	55.00	55.00	55.50	.....	.....	.....
Troy, N. Y. *R3*	56.50	57.00	57.50	58.00	62.50	.....	.....
Youngstown *Y1*	54.50	55.00	55.00	55.50	.....	.....	.....
N. Tonawanda, N. Y. *T1*	.....	55.00	55.50	.....	.....	.....	.....

DIFFERENTIALS: Add 50¢ per ton for each 0.25 pct silicon over base, (1.75 to 2.25 pct, except low phos., 1.75 to 2.00 pct). 50¢ per ton for each 0.50 pct manganese over 1 pct, $2 per ton for 0.5 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Subtract 38¢ per ton for phosphorus, content 0.70 pct and over. Silvery Iron: Add $1.50 per net ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 17 pct. $1 per ton for 0.75 pct or more phosphorus, manganese as above. Bessemer ferrosilicon prices are $1 overcomparable silvery iron.

C-R SPRING STEEL

Cents Per Lb. F.o.b. Mill	CARBON CONTENT				
	0.26–0.40	0.41–0.60	0.61–0.80	0.81–1.05	1.06–1.35
Bridgeport, Conn. *S7*	.....	.....	.....	.....	.....
Carnegie, Pa. *S9*	.....	.....	.....	.....	.....
Cleveland *A5*	5.10	7.30	8.25	10.20	12.90
Detroit *D1*	6.45	7.50	8.10	.....	.....
New Castle, Pa. *B4*	5.80	7.65	8.25	10.20	.....
New Haven, Conn. *D1*	6.70	7.60	8.20	.....	.....
Sharon, Pa. *S1*	5.80	7.65	8.25	10.20	12.50
Trenton, N. J. *R4*	.....	7.95	8.55	10.50	12.80
Weirton, W. Va. *W3*	5.80	7.65	8.25	10.20	12.50
Worcester, Mass. *A5*	5.40	7.60	8.55	10.50	12.80
Youngstown *C3*	.....	7.65	8.25	10.20	12.50

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts Treated
Bessemer *U1*	3.775	4.25	4.925	....	....	....	....
Chicago *R3*	....	....	....	6.65	....	....	....
Cleveland *R3*	....	....	....	....	....	....	....
Ensley *T2*	3.775	4.25	....	....	....	....	....
Fairfield *T2*	....	4.25	....	6.65	....	4.775	....
Gary *U1*	3.775	4.25	....	....	....	4.775	....
Ind. Harbor *I3*	3.775	....	4.925	6.65	....	4.775	....
Johnstown *B3*	....	4.25	....	....	....	....	....
Joliet *U1*	....	4.25	4.925	....	....	....	....
Kansas City *S2*	....	....	....	....	....	....	....
Lackawanna *B3*	3.775	4.25	4.925	....	....	4.775	....
Lebanon *B3*	....	....	....	6.65	....	....	....
Minnequa *C6*	3.775	4.75	4.925	6.65	....	4.775	9.85
Pittsburgh *R3*	....	....	....	....	....	....	....
Pittsburgh *O1*	....	....	....	....	....	....	....
Pittsburgh *P5*	....	....	....	....	....	....	....
Pittsburgh *J3*	....	....	....	6.65	....	....	....
Pitt'g, Cal. *C7*	....	....	....	....	....	4.925	....
Seattle *B2*	....	....	....	7.15	....	4.925	....
Steelton *B3*	3.775	....	4.925	....	....	4.775	....
Struthers *Y1*	....	....	....	6.65	....	....	....
Torrance *C7*	....	....	....	....	....	4.925	....
Youngstown *R3*	....	....	....	6.65	....	....	....

TOOL STEEL

F.o.b. mill
Add 4.7 pct

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	$1.505
18	4	1	—	5	$2.13
18	4	2	—	—	$1.65
1.5	4	1.5	8	—	81.0¢
6	4	2	6	—	96.5¢

High-carbon chromium ..... 63.5¢
Oil hardened manganese ..... 35¢
Special carbon ..... 32.5¢
Extra carbon ..... 27¢
Regular carbon ..... 23¢

Warehouse prices on and east of Mississippi are 3.5¢ per lb. higher. West of Mississippi, 5.5¢ higher.

CLAD STEEL

Add 4.7 pct

Stainless-carbon	Plate	Sheet
No. 304, 20 pct.		
Coatesville, Pa. *L4*	*29.5	
Washington, Pa. *J2*	*29.5	
Claymont, Del. *C4*	*28.00	
Conshohocken, Pa. *A2*		*27.50
New Castle, Ind. *I2*	*29.77	*26.24
Nickel-carbon		
10 pct Coatesville, Pa. *L4*	32.5	
Inconel-carbon		
10 pct Coatesville, Pa. *L4*	40.5	
Monel-carbon		
10 pct Coatesville, Pa. *L4*	33.5	
No. 302 Stainless-copper stainless, Carnegie, Pa. *A4*		77.00
Aluminized steel sheets, hot dip, Butler, Pa. *A7*		7.75

* Includes annealing and pickling, or sandblasting.

ELECTRODES

Cents per lb, f.o.b., plant threaded electrodes with nipples, unboxed

Diam. in in.	Length in in.	Cents Per lb.
	GRAPHITE	
17, 18, 20	60, 72	17.85
8 to 16	48, 60, 72	17.85
7	48, 60	19.57
6	48, 60	20.95
4, 5	40	21.50
3	40	22.61
2½	24, 30	23.15
2	24, 30	25.36
	CARBON	
40	100, 110	8.03
35	65, 110	8.03
30	65, 84, 110	8.03
24	72 to 104	8.03
20	84, 90	8.03
17	60, 72	8.03
14	60, 72	8.57
10, 12	60	8.84
8	60	9.10

FLUORSPAR

Washed gravel, f.o.b. Rosiclaire, Ill. Price, net ton; Effective CaF_2 content:
70% or more $43.00
60% or less 40.00

BOLTS, NUTS, RIVETS, SCREWS

Consumer Prices

(Base, discount, f.o.b. mill, Pittsburgh, Cleveland, Birmingham or Chicago)

Nuts, Hot Pressed, Cold Punched—Sq.

Pct Off List

	Less Keg. Reg.	K.	Less Keg. Hvy.	K.
½ in. & smaller.	15	28½	15	28½
9/16 in. & ⅝ in.	12	25	6½	21
¾ in. to 1½ in inclusive	9	23	1	16½
1⅝ in. & larger.	7½	22	1	16½

Nuts, Hot Pressed—Hexagon

½ in. & smaller.	26	37	22	34
9/16 in. & ⅝ in..	16½	29½	6½	21
¾ in. to 1½ in. inclusive	12	25	2	17½
1⅝ in. & larger.	8½	23	2	17½

Nuts, Cold Punched—Hexagon

½ in. & smaller.	26	37	22	34
9/16 in. & ⅝ in.	23	35	17½	30½
¾ in. to 1½ in. inclusive	19½	31½	12	25
1⅝ in. & larger.	8½	23	2	17½

Nuts, Semi-Finished—Hexagon

	Reg.		Hvy.	
½ in. & smaller.	35	45	28½	29½
9/16 in. & ⅝ in.	23	35	17½	30½
¾ in. to 1½ in. inclusive	24	36	15	28½
1⅝ in. & larger.	13	26	8½	23
	Light			
7/16 in. & smaller	35	45		
½ in. thru ⅝ in.	28½	39½		
¾ in. to 1½ in. inclusive	26	37		

Stove Bolts

Pct Off List

Packaged, steel, plain finished 48—10
Packaged, plain finish ..... 31—10
Bulk, plain finish** 62*

*Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.

**Zinc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.

Rivets

Base per 100 lb

½ in. & larger $7.85

Cap and Set Screws

(In bulk) *Pct Off List*

Hexagon head cap screws, coarse or fine thread, ¼ in. thru ⅝ in. x 6 in., SAE 1020, bright 54
¾ in. thru 1 in. up to & including 6 in. 48
¼ in. thru ⅝ in. x 6 in. & shorter high C double heat treat 46
⅞ in. thru 1 in. up to & including 6 in. 41
Milled studs 35
Flat head cap screws, listed sizes.... 16
Fillister head cap, listed sizes 34
Set screws, sq head, cup point, 1 in. diam. and smaller x 6 in. & shorter 53

Machine and Carriage Bolts

	Pct Off List Less Case	C.
½ in. & smaller x 6 in. & shorter	15	28½
9/16 in. & ⅝ in. x 6 in. & shorter	18½	30½
¾ in. & larger x 6 in. & shorter	17½	29½
All diam. longer than 6 in...	14	27½
Lag, all diam. x 6 in. & shorter	23	35
Lag, all diam. longer than 6 in.	21	33
Plow bolts	34	....

REFRACTORIES

Fire Clay Brick

Carloads, per 1000

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add $5) .. $94.60
No. 1 Ohio 88.00
Sec. quality, Pa., Md., Ky., Mo., Ill.. 88.00
No. 2 Ohio 79.20
Ground fire clay, net ton, bulk (except Salina, Pa., add $1.50)..... 13.75

Silica Brick

Mt. Union, Pa., Ensley, Ala. $94.60
Childs, Pa. 99.00
Hays, Pa. 100.10
Chicago District 104.50
Western Utah and Calif. 111.10
Super Duty, Hays, Pa., Athens, Tex., Chicago 111.10
Silica cement, net ton, bulk, Eastern (except Hays, Pa.) 16.50
Silica cement, net ton, bulk, Hays, Pa. 18.70
Silica cement, net ton, bulk, Ensley, Ala. 17.60
Silica cement, net ton, bulk, Chicago District 17.60
Silica cement, net ton, bulk, Utah and Calif. 24.70

Chrome Brick

Per Net Ton

Standard chemically bonded Balt., Chester $82.00

Magnesite Brick

Standard, Baltimore $104.00
Chemically bonded, Baltimore 93.00

Grain Magnesite

St. ⅜-in. grains

Domestic, f.o.b. Baltimore in bulk fines removed $62.70
Domestic, f.o.b. Chewalah, Wash., in bulk 36.30
in sacks 41.80

Dead Burned Dolomite

F.o.b. producing points in Pennsylvania, West Virginia and Ohio per net ton, bulk Midwest, add 10¢; Missouri Valley, add 20¢... $13.75

LAKE SUPERIOR ORES

51.50% Fe; natural content, delivered lower Lake ports. Prices effective July 26, 1952

Gross Ton

Old range, bessemer $9.45
Old range, nonbessemer 9.30
Mesabi, bessemer 9.20
Mesabi, nonbessemer 9.05
High phosphorus 9.05

After adjustments for analysis, prices will be increased or decreased as the case may be for increases or decreases after Dc. 2, 1950, in Lake vessel rates, upper Lake rail freights, dock handling charges and taxes thereon.

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron c.l.f. New York, ocean bags... 10.9¢
Canadian sponge iron, del'd. in East ..... 12.0¢
Domestic sponge iron, 98+% Fe, carload lots ..... 15.5¢ to 17.0¢
Electrolytic iron, annealed, 99.5+% Fe ..... 44.0¢
Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe 60.0¢
Hydrogen reduced iron, minus 300 mesh, 98+% Fe. 63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 micron, 98%, 99.8+% Fe. 83.0¢ to $1.48
Aluminum ..... 31.5¢
Brass, 10 ton lots ..... 30.00¢ to 33.25¢
Copper, electrolytic 10.75¢ plus metal value
Copper, reduced... 10.00¢ plus metal value
Cadmium, 100-199 lb. 95¢ plus metal value
Chromium, electrolytic, 99% min., and quantity, del'd $3.50
Lead ..... 7.5¢ to 12.0¢ plus metal value
Manganese ..... 57.0¢
Molybdenum, 99% $2.75
Nickel, unannealed ..... 88.0¢
Nickel, annealed ..... 95.0¢
Nickel, spherical, unannealed 92.0¢
Silicon ..... 38.5¢
Solder powder.. 7.0¢ to 9.0¢ plus met. value
Stainless steel, 302 ..... 83.00¢
Stainless steel, 316 ..... $1.10
Tin ..... 14.00¢ plus metal value
Tungsten, 99% (65 mesh).. $6.00
Zinc, 10 ton lots ..... 23.0¢ to 30.5¢

Ferroalloy Prices

Ferrochrome

Contract prices, cents per pound, contained Cr, lump size, bulk in carloads delivered. (65-72% Cr, 2% max. Si.)

0.06% C ...	30.50	0.20% C ...	29.50
0.10% C ...	30.00	0.50% C ...	29.25
0.15% C ...	29.75	1.00% C ...	29.00
2.00% C			28.75
65-69% Cr, 4-9% C			22.00
62-66% Cr, 4-6% C, 6-9% Si			22.60

S. M. Ferrochrome

Contract price, cents per pound, chromium contained, lump size, delivered.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carloads	21.60
Ton lots	23.75
Less ton lots	25.25

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.

Carloads	27.75
Ton lots	30.05
Less ton lots	31.85

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.

Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.

0.10% max. C	$1.14
0.50% max. C	1.10
9 to 11% C	1.08

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.) Contract price, carloads, f.o.b. Niagara Falls, freight allowed: lump 4-in. x down, bulk 2-in. x down, 21.75¢ per lb of contained Cr plus 12.40¢ per lb of contained Si.

Bulk 1-in. x down, 21.90¢ per lb contained Cr plus 12.60¢ per lb contained Si.

Calcium-Silicon

Contract price per lb of alloy, dump delivered.

30-33% Ca, 60-65% Si, 3.00% max. Fe.

Carloads	19.00
Ton lots	22.10
Less ton lots	23.60

Calcium-Manganese—Silicon

Contract prices, cents per lb of alloy lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads	20.00
Ton lots	22.30
Less ton lots	23.30

CMSZ

Contract price, cents per lb of alloy, delivered.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.

Alloy 5: 50.56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.

Ton lots	20.75
Less ton lots	22.00

SMZ

Contract price, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, ½ in. x 12 mesh.

Ton lots	17.50
Less ton lots	19.50

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn.

Ton lots	16.50
Less ton lots	17.75

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed	18.00
Ton lots to carload packed	19.00
Less ton lots	20.50

Ferromanganese

78-82% Mn, maximum contract base price, gross ton, lump size.

F.o.b. Niagara Falls, Alloy, W. Va., Ashtabula, O. $225
F.o.b. Johnstown, Pa. $227
F.o.b. Sheridan, Pa. $225
F.o.b. Etna, Clairton, Pa. $228

Add $2.80 for each 1% above 82% Mn, subtract $2.80 for each 1% below 78% Mn.

Briquets—Cents per pound of briquet, delivered, 66% contained Mn.

Carload, bulk	13.45
Ton lots, packed	14.05

Spiegeleisen

Contract prices gross ton; lump, f.o.b

	16-19% Mn 3% max. Si	19-21% Mn 3% max. Si
Palmerton, Pa.	$84.00	$85.00
Pgh. or Chicago	84.00	85.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.

96% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.

Carload, packed	36.95
Ton lots	38.45

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

Carloads	30.00
Ton lots	32.00
Less ton lots	34.00 to 37.00

Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd Mn 85-90%.

	Carloads	Ton	Less
0.07% max. C, 0.06% P, 90% Mn	28.45	30.30	31.50
0.07% max. C	27.95	29.80	31.00
0.15% max. C	27.45	29.30	30.50
0.30% max. C	26.95	28.80	30.00
0.50% max. C	26.45	28.30	29.50
0.75% max. C, 80-85% Mn, 5.0-7.0% Si	23.45	25.30	26.50

Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb of contained Mn ..... 21.35¢

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C. For 2% max. C, deduct 0.2¢.

Carload bulk	11.40
Ton lots	13.05
Briquet, contract basis carlots, bulk delivered, per lb of briquet	12.65
Ton lots, packed	14.25

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $95.00 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $93.00. Add $1.00 per ton for each additional 0.50% Si up to and including 17%. Add $1.00 for each 0.50% Mn over 1%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.

96% Si, 2% Fe	18.00
97% Si, 1% Fe	18.50

Silicon Briquets

Contract price, cents per pound of briquet bulk, delivered, 40% Si, 2 lb Si briquets.

Carloads, bulk	6.95
Ton lots	8.55

Electric Ferrosilicon

Contract price, cents per pound contained Si, lump, bulk, carloads, delivered.

25% Si ...	20.00	75% Si ...	14.30
50% Si ...	12.40	85% Si ...	15.55
90-95% Si			17.00

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots ...	$2.05	$2.95	$3.75
Less ton lots..	2.40	3.20	4.55

Ferrovanadium

35-55% contract basis, delivered, per pound, contained V.

Openhearth	$3.00-$3.10
Crucible	3.10- 3.20
High speed steel (Primos)	3.20- 3.25

Alsifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.

Carloads	9.90
Ton lots	11.30

Calcium molybdate, 46.3-46.6% f.o.b. Langeloth, Pa., per pound contained Mo $1.15

Ferrocolumbium, 50-60% 2 in. x D, contract basis, delivered per pound contained Cb.

Ton lots	$4.90
Less ton lots	4.95

Ferro-Tantalum-Columbium, 20% Ta, 40% Cb, 0.30 C. Contract basis, delivered, ton lots, 2 in. x D, per lb of contained Cb plus Ta $3.75

Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo $1.32

Ferrophosphorus, electrolytic, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $3 unitage, per gross ton $65.00
10 tons to less carload $75.00

Ferrotitanium, 40% regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti $1.35

Ferrotitanium, 25%, low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti $1.50
Less ton lots 1.55

Ferrotitanium, 15 to 18%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton $177.00

Ferrotungsten, standard, lump or ¼ x down, packed, per pound contained W5, ton lots, delivered $5.00

Molybdic oxide, briquets or cans, per lb contained Mo, f.o.b. Langeloth, Pa. $1.14
bags, f.o.b. Washington, Pa., Langeloth, Pa. $1.13

Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound

Carload, bulk lump	14.50¢
Ton lots, bulk lump	15.75¢
Less ton lots, lump	16.25¢

Vanadium Pentoxide, 86 - 89% V_2O_5 contract basis, per pound contained V_2O_5 ..... $1.28

Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.
Ton lots ..... 21.00¢

Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy.
Carload, bulk ..... 7.00¢

Boron Agents

Borosil, contract prices per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B.... $5.25

Bortam, f.o.b. Niagara Falls

Ton lots, per pound	45¢
Less ton lots, per pound	50¢

Corbortam, Ti, 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed.
Ton lots, per pound ..... 10.00¢

Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C. 1 in. x D. Ton lots.... $1.20
F.o.b. Wash., Pa.; 100 lb up

10 to 14% B	.85
14 to 19% B	1.20
19% min. B	1.50

Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over.

No. 1	$1.00
No. 6	68¢
No. 79	50¢

Manganese - Boron, 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd

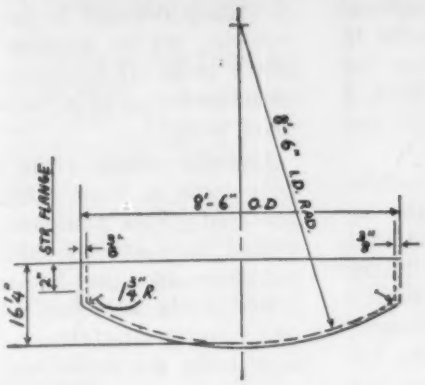
Ton lots	$1.46
Less ton lots	1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered
Less ton lots $1.80

Silcas, contract basis, delivered.
Ton lots ..... 45.00¢

FOR SALE

IMMEDIATE SHIPMENT FROM WINNIPEG, MAN.



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WINNIPEG MAN.

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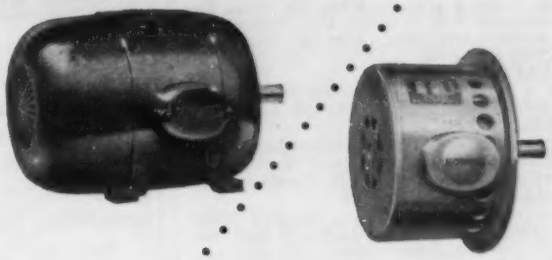

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CONSIDER GOOD USED EQUIPMENT FIRST

BELT GRINDING UNIT
Hill Clutch & Machine & Fdy. Co. Open Side Abrasive Belt Grinding Unit, Designed to accommodate slabs up to ⅜" thick x 30" wide x 30' long.

BRAKE—LEAF TYPE
16' x ¾" Dreis & Krump Leaf Type Bending Brake, Motor Driven with 40 H.P. A.C. Motor.

BUILDING
72'6" x 140' Steel Building—NEW—Designed for Corrugated Steel Siding and to carry load of 30 ton overhead electric traveling crane.

CHARGING MACHINE
6000 lb. Brosius Floor Type Gasoline Driven Charging Machine. Equipped with Peel, Gasoline Engine, Rubber Tires.

CRANE
5 ton Niles Crane 56' 3⅜" Span. Three motors, 440 volt, 3 phase, 60 cycle.

CRANE—GANTRY
5 ton Whiting Two Leg Gantry Crane 52 Ft. Span Cab Control. Three Motors 220 v. 3 ph. 60 cy.

FLANGING MACHINE
¾" McCabe Pneumatic Flanging Machine, Pneumatic Holddowns, Circle Flanging Attachment.

FORGING MACHINE
5" Ajax Forging Machine or Upsetter, Motor driven. Equipped with Air Clutch.

FURNACES—Melting
400 lb. Moore Type "UT" Melting Furnace Top Charge. Complete with Transformer. New 1943—Little Used.
15 ton Heroult Model V-12 Electric Melting Furnace Top Charge hydraulically operated. Complete with Transformer Equipment.
25 ton Moore Size "NT" Melting Furnace, with 7500 KVA Transformer 13,200 vo. 3 ph. 60 cy.

LEVELER—ROLLER
60" Aetna-Standard Roller Leveler, Motor Driven. 17 Rolls 4⅜" Dia.

PLANERS
48" x 48" x 20' Cincinnati, Four Head
48" x 48" x 12' Niles-Bement-Pond, Four Head
60" x 60" x 12' Niles-Bement-Pond, Four Head
72" x 72" x 12' Niles-Bement-Pond, Four Head

PLATING MACHINE
Type "B" Crown Full Automatic, Nickel & Chrome Plating Machine, Max. Work Size 16" wide x 36" deep x 4" thick.

PRESS—KNUCKLE JOINT
1000 ton Bliss #27 Knuckle Joint, Embossing & Coining Press, 2½" stroke, 18" Shut Height.

ROLLING MILLS
8" x 10" Schmitz Single Stand Two High With Friction Drive Rewinder.
12½" x 16" Philadelphia Two High Cold Rolling Mill. Complete with Pinion Stand, 75 H.P. Motor 440/3/60. Starter and Controls, Incl. Coiler.
12" x 20" Waterbury Farrel Single Stand Two High. Complete with Gear Reducer and 50 H.P. A.C. Motor.
18" x 24" Waterbury Farrel Two Stand Two High Rolling Mill. Complete with Elec. Equip.
18" x 60" Three High Roughing Mill, Complete with billet heating furnace and accessory equipment including electrical equipment

STRAIGHTENERS
No. 3 Medart 3-Roll Straightening Machine Capacity 1" to 3½" Bars or 4½" O. D. Pipe or Tubing. NEW 1950.
No. 4 Kane Roach 8-Roll Straightener Capacities 2" Rounds or Squares, 3x3x⅜" Angles, 2½" Channels, etc.
No. 1B Sutton Round Straightener, Motor Drive, Capacity 3/16" to ¾" O.D. Friction Drive complete with 1/3 H.P. A.C. Motor

TESTING MACHINE
300,000 lb. SOUTHWARK-EMERY Universal Hydraulic Testing Machine.

TRIMMING LINE
#1049 Torrington Trimming Line, With Feed Rolls and Scrap Cutter. Capacity for steel or aluminum alloys ⅛" max. Trimmed width 22" min. 66" max. Scrap Length ¾" min. 2¼" max.

UNIVERSAL IRONWORKERS
Ryerson Steel Frame Universal Iron Worker, M.D. Capacity Punch ⅝" thru ⅝", Shear 1" Square 1¼" Round, ½" x 4" Flat, 4 x 4 x ¼" Angles.
No. 28U-30 Buffalo Armor Plate Universal Ironworker—Combination Punch, Shear & Bar Cutter. Motor Driven Capacities—Shear 3" Round, 2⅝" Square, 5x1⅛" Flat, 5x5x⅝" Angles, 12"—31½# Beams, etc., Punch 1½" thru 1¼".

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The Clearing House

NEWS OF USED, REBUILT AND SURPLUS MACHINERY

Barren Ground — Geographical location is an important factor in the used machinery trade on the West Coast. The farther north a dealer is from Los Angeles the worse his business it seems.

Not that L.A. is a used machinery boom town; it's just better by comparison. Many plants in that area are buying used machinery to side-step the 6 to 13-month waiting period required to get most types of new machinery there. Interest, however, is focused on late model machines in good condition. Machinery that's not up to snuff gets the fish-eye treatment.

Demand Varied—Types of machinery in greatest demand are production units such as turret lathes, turret milling machines and automatic units. There are also requests for fabrication tools such as punch presses and shears for sheet metal work as in the production of lockers, cabinets and light structurals.

One factor depressing used machinery sales on the West Coast is the leasing of government-owned machine tools to defense producers. This has turned out to be a boomerang blessing, however. Though the government equipment competes with dealer sales, it has stimulated repair and reconditioning activity, since most of the machines have to be worked over before they can be pressed into production.

Fond Memories — In the San Francisco Bay area the trade remembers the splurge of new, used and surplus machine tool buying that hit the section about 2 years ago when large defense plants tooled up. But memories are all that are left. What little demand there is for used machines is concentrated on milling machines, radial drills and lathes.

Used machinery salesmen in the Portland-Seattle section have been carrying the crying towel as standard equipment for a long time. Aside from firms like Boeing Aircraft that want the latest, fastest units available, principal source of steady demand is the logging industry which is after maintenance tools. Older machines can be unloaded on this market if the price is right.

Imports—Some traffic in European tools in lower California is reported. This equipment is accepted on a second choice basis, but users, once they become accustomed to the imported machinery, find it quite satisfactory. The foreign tools are traditionally built more for versatility rather than high speed production, but their lower price makes them acceptable substitutes.

There have also been a few sales of Japanese machine tools, but most dealers bypass this machinery source.

Rebuilding—Despite the decided slow-up of the government rebuilding program, major rebuilders in the Detroit area are not pressing their noses against bakery windows.

As the government began to catch up with its rebuilding needs, many in the trade anticipated a sharp business drop. This expected decline has not materialized to the extent feared. The government program, with its special delivery priority, created a backlog of rebuilding requirements in going plants, and that's what's keeping the industry busy at present.

With the shortage of new machinery and machine tools still prevalent, many Detroit plants, both large and small, are taking advantage of available rebuilding facilities to jack up the productive capacity of their tools. Lower cost of rebuilding as contrasted to purchase prices of new equipment is another factor contributing to the health of the rebuilding trade.

Most of this rebuilding business is going to larger firms that have the tools, skilled manpower and facilities to do the complete rebuilding job needed to bring old tools up to new machine tool standards.

CONSIDER GOOD USED EQUIPMENT FIRST

AIR COMPRESSORS
14" x 12" Pennsylvania Air Compressor, 100# Pressure, Complete with 75 H.P. Syn. Motor
18" & 11" x 14" Sullivan WJ-3 Air Compressor 885 CFM. Driven by 150 H.P. Westinghouse Syn. Motor 440/3/60

ANGLE BENDING ROLL
Model "C" Galland Henning Angle Bending Roll, Motor Driven. Capacity 6 x 6 x ¾"

BAR TURNING MACHINE
Medart HF-2 Bar Turning Machine, Capacity 1" to 2¼", Complete with Accessories

BENDING ROLLS
6' x ⅜" Ryerson Pyramid Type Bending Roll
20' x 1" Southwark Pyramid Type, Bending Roll
30' x 1" Southwark Pyramid Type, Motor Driven

BRAKES—LEAF TYPE
8' x ¼" Dreis & Krump Leaf Type Bending Brake Motor Driven with 5 H.P. A.C. Motor
12" x 3/16" Chicago #226 Steel Apron Brake, M.D.
16' x ⅜" Dries & Krump Leaf Type Bending Brake, Motor Dr. with 40 H.P. A.C. Motor

BUILDING
72'6" x 140' Steel Building — NEW — Designed for Corrugated Steel Siding—and to carry load of 30 ton Overhead Electric Traveling Crane

BULLDOZER
#9 Williams White Bulldozer, Motor Dr. with 50 H.P. Motor, 440 volt, 3 phase, 60 cycle. Face of Crosshead 20" x 90" Movement of Crosshead 24"

CHARGING MACHINE
6000 lb. Brosius Floor Type Gasoline Driven Charging Machine. Equipped with Peel, Buda Gasoline Engine. Rubber Tires.

CRANES—GANTRY
5 ton Whiting Two Leg Gantry Crane 52' Span Cab Control, Motors 220 v. 3 ph. 60 cy.
15 ton P&H Two Leg Gantry Crane 45' Span With 12' Overhang one end, 10' other end 5 ton Auxiliary, Two Trolleys and 5 Motors, 440 volt 3 phase 60 cycle

CRANES—OVERHEAD ELECTRIC TRAVELING

5 ton Robbins Myers	28'6" Span 220/3/60
5 ton Niles	56' Span 440/3/60 AC
6½ ton Shepard-Niles	80' Span 440/3/60 AC With 2½ yd. Clamshell Bucket
10 ton Shaw	67' Span 230 Volt D.C.
10 ton P & H	40' Span 440/3/60 AC
10 ton Erie	60' Span 440/3/60 AC
15 ton Niles	60' Span 230 Volt D.C.
15 ton Toledo	46' Span 220/3/60
20 ton Bedford	50' Span 220/3/60 AC
20 ton Morgan With 5 ton Auxiliary	68' Span 230 Volt DC

DIEING MACHINES
75 ton Henry & Wright High Speed Dieing Machine Double Roll Feed. Scrap Cutter. 3" Stroke
100 ton Henry & Wright Dieing Machine, 4" Stroke, 13" Shut Height. Complete Elecl. Equip.

DIE CASTING MACHINES
Model BA-12 KUX Die Casting Machine, Air operated. Plunger Gooseneck Type for zinc, lead & tin. Die space between bars 12¼" x 12¼", Die Separates 8" NEW 1949, never used
Pratt & Whitney Type BL-2416 Single Spindle 3-Dimensional Keller Machine, with complete electrical equipment and accessories

FLANGING MACHINE
¾" McCabe Pneumatic Flanging Machine, Pneumatic Holddowns, Circle Flanging Attachment

FORGING MACHINES
1½", 2", 3", 4", 5", Ajax
1", 2", 3", 5", Acme
5 Ajax—Air Clutch

FURNACES—ANNEALING
Westinghouse Bell Type Annealing Furnace, Hearth 30" Diameter x 32" High
200 KW Continuous Electric Bright Annealing Furnace Heating Chamber 4'6" x 30' Long. Cooling Chamber 44' Long in two parts

FURNACES—HEATING
40 KW Leeds & Northrup Home Furnace #9478-UB-28. With controls. Work space 28" dia. x 28" deep

FURNACES—MELTING
400 lb. Moore Type "UT" Melting Furnace. Top Charge. Complete with Transformer. New 1943—Little Used.
15 ton Heroult Model V-12 Top Charge Hydraulically Operated, Complete with Transformer Equip.
25 ton Moore Size "NY" Melting Furnace With 7500 KVA Transformer 13,400/3/60

GEAR REDUCERS
500 H.P. United Combination Reduction Gear & Pinion Stand. Gear Ratio 8.581:1
800 H.P. Farrel Birmingham, Size 18 Reduction Gear. Ratio 720 to 244 RPM
700 H.P. Falk Single Reduction Gear, Ratio 875 to 200 RPM
1800 H.P. Mesta Gear Reduction Unit, Ratio 19:1

GRINDER
No. 4 Cincinati Centerless Grinder, Motor Driven. Capacity standard work rest 2" to 6" dia., optional work rest ⅛" to 3". Special fixtures will allow work to be handled up to 9" dia.

GRINDER—CYLINDRICAL
14 x 36" Norton Type C. Complete with Elecl. Equip.

GRINDERS—SURFACE
#34 Abrasive Vertical Spindle Surface Grinder 6" x 24" Wet Tape
No. 2 B & S Universal Surface Grinder, Complete with all necessary equipment & Elecl.

HAMMERS—BOARD DROP
1200, 1600, 4000 lb. Model J2 Chambersburg
1000 lb. Billings & Spencer

HAMMERS—STEAM DROP
1500, 4000 lb Erie

HAMMERS—STEAM FORGING
1200 lb. Massillon Single Frame
1500, 1600, 2000, 3000, 4000 lb. Chambersburg
600, 1500, 2300 lb. N.B.P.
600, 1100, 1500, 2000, 2500, 3500, 4000# Erie
20,000 lb. Massey Steam Forging Hammer

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THERE IS NO SUBSTITUTE FOR EXPERIENCE

CONTACT US IN CONFIDENCE WITHOUT COST OR OBLIGATION

HAMMERS—MISCELLANEOUS
No. 6N Nazel Hammer, Geared Motor Drive
200 lb. Bradley Compact Hammer, Arr. for Motor Drive with 10 H.P. A.C. Motor
2000 lb. Chambersburg Pneumatic Hammer Complete with Elecl. Equip. New 1951
15"x12" Chambersburg Cecostamp Hammer, 18" stroke

LATHE—TURRET
Model 2L Gisholt Geared Head Turret Lathe, Spindle Bore 4-1/16". Elecl. Equipment and numerous accessories incl. NEW 1951

LEVELERS—ROLLER
36" McKay 17 Roll Leveler, 5¼" Dia. Rolls Belted Motor Drive
60" Aetna Standard 17-Roll Leveler, 4⅝", Dia. Rolls Arr. Motor Drive.

MOTORS
1250 H.P. Westinghouse Induction Motor 6600 volt 3 phase 60 cycle 593 R.P.M.
2000 H.P. General Elec. Induction Motor 6600 volt 3 phase 60 cycle 600 R.P.M.
2500 H.P. General Elec. Direct Current Motor 6600 volt 175/350 R.P.M.

MOTOR GENERATOR SET
740 H.P. General Electric Syn. Motor 4400 volt A.C. with two generators 750 KVA 230 volt D.C., Complete with Panel Board, etc.

NAIL MAKING MACHINES
No. 1½ National—Sizes 10D, 12D, 16D, 20D, 30D
No. 3 National—Size 6D
No. 2 Glader—Sizes 6D, 7D, 8D, 9D
Angell—Sizes 10D, 12D, 16D, roofing

PLANERS
32x35"x10' Niles One Rail Head
48"x48"x12' Niles-Bement-Pond, Four Head
48"x48"x20' Cincinnati, Four Head
60"x60"x12' Niles-Bement-Pond, Four Head
72"x72"x12' Niles-Bement-Pond, Four Head

PLANERS—OPEN SIDE
48"x48"x14' Detrick & Harvey
60"x66"x18' Detrick & Harvey, Two Head, M.D.

PLANER—PLATE EDGE
30" x 1¼" Southwark Plate Edge Planer, Motor Driven. Equipped with 16 Pneumatic Jacks

PRESSES—HYDRAULIC
No. 200 Milwaukee Briqueting Press, Complete with Pumps. Piston Load 118 tons. Hydraulic Operating Pressure 2100 lbs. psi.
75 ton Williams White Straightening Press, 27" Stroke. Bed 8' x 16". 6½" Dia. Ram
200 ton Bliss Hydrodynamic 48" Stroke Bed Area 24" x 24". Hyd. Pump Incl.
500 ton Southwark Hydraulic 24" Stroke. 78" Daylight Platen 64" R to L x 32" F to B
500 ton Southwark Open Throat Hydraulic Press 12" Stroke Platen 56" x 56"
700 ton Elmes Forming Press, 27" Stroke, 30" Dia. Ram, Platen 40" x 88" with overhang 40" x 129". Complete with Pump & Motor

PRESS—HYDRAULIC WHEEL
100 ton Elmes Inclined Hydr. Wheel Press 72" Between Parallel Bars. Complete with Pump & Motor

PRESS—KNUCKLE JOINT
#27 Bliss Knuckle Joint Embossing & Coining Press 1000 ton Capacity. 2¾" Stroke, 18" Shut Height

PRESSES—STRAIGHT SIDE
No. 87A Bliss 250 Ton Capacity, Double Geared 32" Stroke, 30" x 32" Bed Area. Air Cushion
No. 305 Bliss 9" Stroke 14" Shut Height Equipped with Marquette Air Cushion
No. 59 Toledo Double Geared Tie Rod Press 255 ton Friction Clutch 18" Stroke 36¼" x 25" Bed Area
No. 3 Ferracute Super Speed Punch Press 30 ton Capacity. NEW 1946—never used.
No. 675B Bliss Single Geared 1½" Stroke, Double Roll Feed & Chopper, 10 H.P. A.C. Motor.
No. 620 Bliss High Production Press, 1¼" Stroke SI-40 Verson 200 ton Press, 30" Stroke Bed Area 40"x44"
No. 12 Zeh & Hahnemann Patent Percussion Press 150 ton 12" Stroke 17" x 17" Bed Area

PRESSES—TRIMMING
Bliss S.S. Trimming Press with Side Shear, 250 Ton Capacity, 8" Stroke 52"x30" Bed Area
No. 3 Erie Flywheel Drive Trimming Press, 3¾" Stroke 13" Between Guides
No. 18 Erie Trimming Press, 100-150 Ton

PUNCH—BEAM
Long & Allstatter Double End Beam Punch, Capacity Beam Punch End—Punch flanges and web 24" I-beam and smaller

PUNCH & SHEAR COMBINATIONS
Ryerson Steel Frame Universal Ironworker, M.D. Capacity Punch ⅝" thru ⅞" Shear 1" Square, 1¼" Round, ¼" x 4" Flats 4 x 4⅛" Angles
No. 29 U-30 Buffalo Armor Plate Universal Ironworker. Capacity Punch 1⅛" thru 1¼" Shear 2" Round 3⅝" Square, 5 x 1⅝" Flat, 5 x 5⅛" Angles.
Style EF Cleveland Single End Punch & Shear, M.D. Capacity Punch 1" thru 1¼"

RIVETER
125 ton Hanna Bull Riveter, Air Driven, 24" Gap, 75" Reach. Capacity 1" rivets cold and 1¼" rivets hot

ROLL—PLATE STRAIGHTENING
7 Roll Bertsch Plate Straightening Machine, Capacity 10' x ¾". Complete Elecl. Equip.

ROLLING MILLS
7¼" Steckel Four High Rolling Mill, Max. Steel Width 6". Work Rolls 2½" x 7½", Complete with electrical equipment
8"x10" Schmitz Single Stand Two High
12"x16" Single Stand Two High, Comp. with Elecl. Equip.
12"x20" Waterbury Farrel Single Stand Two High
12"x24" Waterbury Farrel Two High
18"x24" Waterbury Farrel Two Stand Two High
20"x36" Poole Two Stand Two High
22"x40" Single Stand Two High
28"x60" Single Stand Two High
18"x60" Three High Roughing Mill. Complete with billet heating furnace and accessory equipment incl. elecl. equip.

ROLL—TAPER FORGING
No. 60 Williams White Taper Forging Roll. Rolls 24" Dia., Shaft 8" Dia.

SAW
No. 3 Ryerson Friction Saw, 54" Blade Hydraulic Feed. Complete with Elecl. Equip.
52" Ryerson Friction Saw, 45 H.P. Motor Capacity Approx. 9" Round, 20" I-beam, 12" H-beam

SHEAR—ALLIGATOR
No. 7 Thomas Carlin Alligator Shear, 16" Blade, 30 H.P. D.C. Motor

SHEARS—ANGLE
Hilles & Jones No. 2 Double Angle Shear, M.D. Capacity 6" x 6" x ⅝"
Long & Allstatter Double Angle Shear, Model B. Capacity 6x6x⅝". Complete with Elecl. Equip.

SHEAR—BAR
No. 2 LH Lewis Open End Bar Shear, Motor Drive. Capacity 1¾" Round

SHEAR—GUILLOTINE
No. 6 Hilles & Jones Guillotine Shear, Capacity 5" Round, 4½" Square, 16x2" Flat

SHEARS—ROTARY
No. 60 Quickwork Rotary Shear, ⅝" Capacity
No. 100 Kling Rotary Shear, 1" Capacity
Quickwork Heavy Duty Circle Shear ⅝" Capacity Complete with Circle Cutting Attachment

SHEARS—SQUARING
12'x3/16" Stamco Steel Squaring Shear, Motor Dr.
8' x ¼" Drabert Model THZ 6/2500
8'x 3/16" Cincinnati Series 1408, Motor Driven
6' x ¼" Long & Allstatter, Belted Motor Drive

SLITTERS
24" Yoder No. 3 Sheet Slitter, Motor Driven, Capacity 83 cuts .015 to 4 cuts .188 Minimum width ⅛". Entry and exit rollers, Entry and exit tables NEW 1951
31" Yoder Sheet Slitter No. 530, Capacity 3 cuts .194" to 8 Cuts .156", Motor Dr.
72" Yoder Gang Slitter, Capacity 5 Cuts 20 Ga.

STRAIGHTENERS
No. 3 Medart 3-Roll Straightening Machine Capacity 1" to 3½" bars or 4½" O.D. Pipe or Tubing. NEW 1950.
No. 4 Kane & Roach 3-Roll Straightener Capacities 3" Rounds or Squares, 3x3x⅝" Angles 2½" Channels, etc.
No. 1½B Sutton Round Straightener, Motor Dr. Capacity Tubing 5/16" to 2⅞"—modified to handle up to 3½" O.D. tubing
No. 1B Sutton Round Straightener, Motor Drive Capacity 3/16" to ⅝" O.D. Friction Drive complete with 1/3 H.P. A.C. Motor
Haliden 8-Roll Strip Straightener, Flying Shear & Cutting Machine, Capacity 14" wide 11 Ga. Sheet Steel

STRETCHER
McKay Hydraulic Bar Stretcher, Capacity up to 1¾" dia. in lengths 12' to 27'

SWAGING MACHINES
No. E4 Langeller, Capacity 1½" Tubing
No. 408 Etna Swager, Capacity 4" Tubing

TESTING MACHINES
300,000# Southwark Emery Universal Hydraulic
60,000 lb. Olsen 4 Screw Rotating Nut Type Universal

TRIMMING LINE
#1040 Torrington Trimming Line, With Feed Rolls and Scrap Cutter, Capacity for steel or aluminum alloys ⅛" max. Trimmed width 22" min. 68" max., Scrap Length ⅝" min., 3¼" max.

TUBE MILL
Complete equipment for hot rolling seamless steel tubes ranging in sizes from 6⅝" to 14⅜"

WELDERS
250 KVA Progressive Model A-6 Flash Welder 440 volt 60 cycle. Mechanical Contactor Hi-Pressure Clamp Assembly—NEW 1949
McKay Tube or Pipe Welding Unit, Capacity 4⅜" to 7⅝" O.D. Complete with all accessory equipment and motors

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RE-NU-BILT
GUARANTEED
ELECTRIC POWER EQUIPMENT

D.C. MOTORS

Qu.	H.P.	Make	Type	Volts	RPM
1	2200	G.E.	MCF	600	400/500
1	1750	Whse.		600	550/700
1	1500	Whse.		525	600
1	940	Whse.	QM	250	140/170
1	600	Al. Ch.		250	400/500
1	500	Whse.	CC-216	600	300/900
2	450	Whse.		550	415
1	400	G.E.	MCF	570	800/1050
1	350	Cr. Wh.	CCM-151H	230	1160
	335	Whse.	MQ	230	300/900
1	200/300	G.E.	MPC	230	360/920
1	200	Rel.	19707	230	720
1	150	G.E.		600	250/750
1	150	Cr. Wh	65H	230	1150
10	150	Cr. Wh.	8SH-TEFC	230	960
2	150	Whse	8K151B	230	900/1800
1	150	Whse.	SK-201	230	360/950
1	50/120	G.E.	MCF	230	250/1000
2	100	Whse	SK-181	230	450/1000
1	100	G.E.	CD-175	230	365/730
1	100	G.E.	CDP-115	230	1750

MILL & CRANE

1	50	G.E.	CO-1810	230	725
1	33	Whse.	K-8	230	505
2	30	G.E.	MD-1014½AA	550	700
1	20	Whse.	K-5	230	975
4	15	Whse.	K-5	230	630
1	10	C.W.	SCM-AH	230	1150
1	10	G.E.	MD-104	230	400/800
8	6.25	Whse.	K-3	230	690
4	3	C.W.	SCM-FF	230	1750
2	3	Whse.	HK-2	230	835
1	2¼	Whse.	K-1	230	835

A.C. MOTORS
3 phase—60 cycle

SLIP RING

Qu.	Hp.	Make	Type	Volts	Speed
1	1800	G.E.	MT-498	2300	360
1	1500	ABB		2300	720
1	1200	G.E.	MP	2300	375
1	500	Whse.	CW	550	350
1	500	G.E.	IM	440	900
2	500	G.E.	M-574-Y	6600	900
1	500	G.E.	IP	550	505
1	400	Whse.	CW	440	514
1	350	G.E.	MT-442Y	2200/4000	258
1	300	Al. Ch.		440	585
1	250	G.E.	MT-424-Y	4000	257
1	250	G.E.	MT-8598	2200	1800
1	250	Al. Ch.		550	600
1	200	Cr. Wh.	26QB	440	505
2	200	G.E.	IM17	550	585
3	200	G.E.	IM-17	440	600
1	200	G.E.	IM	440	435
1	200	G.E.	MTP	440	1170
1	150 (unused)	Whse.	CW	2300	435
1	125	Al. Ch.		440	720
4	125	G.E.	MT-566Y	440/2200	435
3	100	G.E.	IM	440	600
5	100	A.C.	ANY	440	695
1	100	G.E.	IM-16	2200	435
1	100	Whse.	CW-868A	440	700

SQUIRREL CAGE

2	450	G.E.	MT-559HY	440	3570
2	450	Whse.	CS-1420	2300/4150	354
1	300	Al. Ch.		2200	385
1	200	G.E.	IK-17	440	580
1	200	G.E.	IK	440	865
3	200	G.E.	KT-557	440	1800
1	150	Whse.	CS-8568	440	880
1	150	Whse.	CS	440	588
1	150/75	G.E.	IK	440	900/450
3	125	Al. Ch	ARW	2200	1750
1	125	G.E.	KF-6328-Z	440/2200	3585
1	125	Whse.	MS	440	485

SYNCHRONOUS

2	3500	G.E.	TS	2300	257
2	2100	G.E.	ATI	2300	360
2	1750	G.E.	ATI	2300	3600
2	2000	Whse.		2300	120
3	735	G.E.	ATI	2200/12000	600
1	450	Whse.		2200	450
2	250	G.E.	TS	2200	150

M-G Sets — 3 Ph. 60 Cy.

Qu.	K.W.	Make	RPM	D.C. Volts	A.C. Volts
2	2000	G.E.	500	660	11000*
1	2000	G.E.	514	600	6600/13200
3	1500	G.E.	514	250	6600/13200
1	1500	G.E.	720	600	6600/13200
1	1500	G.E.	300	275	4400
1	1500	Whse.	600	600	4160
2	1000	Whse.	900	600	4160
1	1000	G.E.	900	260	6600
1	1000 (3U)	G.E.	900	250	2200
1	750	Whse	900	275	4160
1	500	G.E.	720	125	2300
1	500	Whse.	900	125/250	440
1	500	Whse.	900	250	6600/13200
1	500	Whse.	1200	125/250	2300
1	400	Whse.	1200	250	2300
1	400 (3U)	Cr. Wh.	1200	125/250	2300
1	350	G.E.	900	125	2300/4160
1	300	Al. Ch.	1200	125/250	2300
1	150	Whse.	1200	275	2300
1	140 (3U)	Cr. Wh.	600	125/250	440/2300
1	100	Delco	1200	120/240	2300
1	100	G.E.	1170	125	220/440

* 25 Cycle

FREQUENCY CHANGER SETS

Qu.	KW	Make	Freq.	Voltages
1	3000	G.E.	25/60	2300/2300/4000
2	2500	G.E.	25/62.5	2300/2300
1	1000	G.E.	25/58.3	4400/2300
1	500	Al. Ch.	2500	11000/2300

BELYEA COMPANY, INC.
47 Howell Street, Jersey City 6, N. J.

43rd YEAR —:— 43rd YEAR
MOTORS & GENERATORS, etc.
1 YEAR GUARANTEE

Partial Listing Only!

GENERATORS—250 V. D.C. Motor Driven

KW	Make	Type	Speed
1000	Al. Ch.		720
250	Cr. Wh.	CCD	1200
150	West.	SK	900
125	G.E. (2)	MPC	1200
100	Delco		1150
75	Cr. Wh.	51H	1150
50	Cr. Wh.	HH	1150
40	West.	SK	1750
35	G. E.	RC	1750
35	Al. Ch. (4)	3 wire	1750
25	G. E.	CS	1200
15	Star		1750
7½	West.	SK-43	1750
5	West.	SK-284	1750
5	Rel.	T-23T	1750
3	Rel.	T-14T	1740

GENERATORS—Low Voltage D.C.

Amp.	Make	Voltage
10,000	H-V-W	6
10,000	J-L	10
6000	E. Prod.	18/36
5000	H-V-W	6/12
4000	North.	7½
3000	Chandey.	12
2500	Chandey.	6/12
1500	H-V-W	6/12
750	H-V-W	6/12
1000	G. E.	15
1000	G. E.	25
1000	West.	24
100	Diehl	32
200	West.	35
200	Burke	35
125	Diehl	40
500	G. E.	32
1000	Chandey.	40
1500	Century	45
3200	G. E.	50
325	West.	50
1000	G. E.	75

230 V. D.C. MOTORS

H.P.	Make	Type	Speed
250/200	Rel.	2600T	400/800
200/130	Cr. Wh.	CMC-125H	450/900
187½	G. E.	MDS-418AR	435
150	West.	SK	1150
150	West.	SK	850
150	G. E.	LC	1750
125	Rel.	T	600
125/50	E. D.	20-SL	1750/1315
100	West. (4)	SK	1150
100	West. (6)	SK	850
100	Rel.	651-T	600
100	G. E.	RC	500
100	Rel.	1060-T	1150
100	A-C		725
100	FM	TRC-38	800/400
110/55	G. E.	DMC	950/475
90/45	G. E. (2)	RF-17	1150
75	G. E.	CD-155	1150
75	West. (6)	SK	1000
75	G. E.	RC	850
75	Rel.	461-T	850
75	West. (2)	SK	475
75	West.	SK	375/950
75	Cr. Wh.	CMC-125H	850
60	West.	SK	680
60	West.	SK-160	250/1000
60	West.	SK	1750
50	Cr. Wh.	CMC-FH	1150/1750
50	Cr. Wh.	CMC-CH	3600
50	G. E.	CD-93	565
50	West.	SK-160	250/1000
50	G. E.	RF-17	850
45	G. E. (3)	CD-105	1750
40	Cr. Wh.	FH	775
40	West. (5)	SK	400/1200
40	Rel.	461T	350/1050
35	E-D	25S	250/1050
35	West.	SK	1150
35	West.	SK	

SLIPRING MOTORS

H.P.	Make	Type	Speed
600	Cr. Wh.	131-AQ	507
500	Elliott	EFKORE	1180
500	G. E. (2)	IM	450
400	G. E.	IEM-17B	870
250	G. E.	IM-17B	450
200	G. E.	MT-559Y	1175
150	G. E.	IM	870
125	West.	CW	1750
125	G. E.	IM	580
100	G. E.	MT-347	1150
100	G. E.	IM	690

SQUIRREL CAGE MOTORS

H.P.	Make	Type	Speed
250	GE (TENV)	K-6335	1750
200	Wagner	RP2-26Z	1800
200	West.		1750
200	A. Ch.	AR	865
200	G. E.	KF-6335	880
150	West.	CS	1175
150	G. E.	IK	580
125	A. Ch. (2)	53R	3500
125	A. Ch. (5)	AR	1800
125	Century		3500
125	A. Ch.		690
100	West.	CS607S	3540
100	G. E.	1EK	1800
100	West.	CS	870

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AUTOMATICS, 00G Brown & Sharpe
AUTOMATIC, 8" Bullard Mult-Au-Matic, 6-spindle
AUTOMATIC, 6-spindle Baird chucker
BORING MILL, 4" Detrick & Harvey, horizontal, floor type
BORING MILL, 61" Bullard Maximill
BORING MILLS, Two No. 5D Moline, 6-spindle cylinder boring
BROACH, No. 1 Foote Burt duplex surface
BROACH, 2-ton American horizontal hydraulic
BROACH, V42 American hydraulic, 18 ton
BROACH, 12-ton VU 12 LaPointe vertical hydraulic 34" stroke, new 1948
BULLDOZER, No. 22 Williams & White
DRILL, No. 310 Baker, heavy duty
DRILL, 24" Cincinnati upright
DRILL, 24" No. 25 Foote Burt
DRILL, 12-spindle No. 12 Natco
DRILL, 12-spindle No. 10 Defiance rail type
DRILL, 36-spindle Baush, adjustable spindle
GEAR HOBBER, No. 12H G&E
GEAR HOBBER, No. 130 Cleveland Rigidhobber
GEAR HOBBER, No. 3 Adams Farwell
GEAR HOBBERS, Two No. 12 Barber-Colman
GEAR HOBBERS, Nos. 1 and 25 5A Lees Bradner
HONE, Nos. 172 & 2610 Barnes hydraulic
GEAR SHAVER 8"-12" Red Ring
GRINDERS, CENTERLESS, Two No. 2 Cincinnati with pressure lubrication
GRINDER, 6"x30" Cincinnati, type ER, in feed
GRINDERS, CYLINDRICAL, 10x18 Norton with hydraulic quick infeed
GRINDER, CYLINDRICAL, 12"x36" Bath universal
GRINDERS, INTERNAL, Nos. 16-28 and 24-36 Bryant
GRINDERS, INTERNAL, Nos. 72A3 and 72A5 Heald
GRINDERS, SURFACE, 12" and 16" No. 22 Healds
GRINDER, THREAD, late No. 33 Excello, new arranged for groove grinding
HAMMER, Nos. 5N & 6B Nazel pneumatic
HAMMER, 40 lb. Bradley helve
LATHE, TURRET, No. 5 Acme universal
LATHE, TURRET, No. 6 W&S, G, H, motor-in-base
MILLERS, Two No. 2 Cincinnati plain
MILLERS, Nos. 1, 2 and 3 Kent Owens hand
MILLER, 18" Cincinnati automatic
MILLER, 24" Cincinnati automatic duplex
MILLER, type 45 Product-O-Matic
MILLER, 30½" x 21" x 12" Ingersoll 4-spindle planer type
MILLER, 48" x 20" x 20' Ingersoll planer type, 3 vertical heads
MILLER, 48" x 36" x 12' Ingersoll planer type, adj. rail
MILLER, 84" Ingersoll 6-spindle rotary continuous
MILLER, THREAD, Type C Hall planetary
MILLER, THREAD, Nos. 4, 6 and CT 36 Lees Bradner
PLANER, 28"x28"x8' Gray Double housing one head
PLANER, 36"x36"x8' Cleveland openside
PLANER, 48"x48"x12' Gray
PRESSES, Nos. P01, P1, P2, P3, PA4, p5 and CA4 Ferracute
PRESS, 50 ton Warco OBI, 1947
PRESS, No. 61 Cleveland OBI
PRESSES, No. 56½, 57½ and 77½ Bliss s.s. trimming
PRESS, No. 245½ Hamilton s.s. tierod frame
PRESS, No. EG54 Ferracute knuckle joint
PRESS, 800 ton No. 665 Toledo knuckle-joint coining
PRESS, No. DA8411 Hamilton double action toggle draw
PRESS, 100 ton HPM hydraulic
RIVETERS, large variety
SLOTTER, 16" Bement Miles crank
SAWS, Three 816S Kalamazoo metal cutting band, new
SAW, 7" No. 14 Higley cold-cutting
SAWS, three L-W (Toledo) power hack, new
SHAPER, 27" Morton draw cut
SHEAR, 36" throat No. 17F New Duty
STRAIGHTENER, No. 0 Sutton for bars
TAPPER, 3½' Bausch lead screw, radial
TAPPERS, Two No. 71 Ettco
TAPPER, 19" Hammond sensitive drilling & tapping
TESTER, 230,000 inch-pound Tinius-Olsen No. 2 torsion
THREADERS, 2" Landis pipe threading and cutting
THREADERS, Two ¾" Landis, double spindle
THREADERS, 2" Oster rotary head
UPSETTER, 3" National air clutch
UPSETTERS, Two 4" Ajax heavy duty, twin-gear
WELDER, 200 KVA Federal flash butt
WELDER, 100 KVA Thompson automatic spot
WELDERS, 12" and 14", 12 KVA American Electric Fusion Co. spot

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SAGINAW, MICHIGAN

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27"x12' MONARCH Geared Head Engine Lathe, taper attachment, AC-MD

24" x 72" centers BOYE & EMMES Heavy Duty Geared Head Engine Lathe, chuck, AC-MD.

No. 3L GISHOLT Universal Saddle Type Turret Lathe, bar feed, chucks, collets, tooling, hardened ways, rapid traverse, new 1943. Perfect Condition. Immediate Delivery.

No. 28 FOSTER Geared Head Turret Lathe, rapid traverse, AC motors

54" BULLARD Spiral Drive Vertical Turret Lathe, Serial 23000, new 1943, like new

42" BULLARD New Era Type Vertical Turret Lathe, AC-MD

36" BULLARD Vertical Turret Lathe converted to Spiral Drive, AC-MD

1½" LANDIS Double Head Bolt Threader, with leadscrews, MD

No. 1 DOUGLAS Plain Horizontal Mill, table 8"x32", power feeds, motor in base, No. 40 taper, new 1942.

No. 2 VAN NORMAN Plain Horizontal Mill, 1942

No. 3-24 CINCINNATI Plain Hydromatic Mill

1" capacity, new 1942, completely rebuilt 5-13" column CARLTON Radial Drill AC motor on arm, 15 to 1500 RPM

4' AMERICAN High Speed Sensitive Radial Drill 9" column, AC motor on arm

3 Spindle FOSDICK Drill Press, Individual AC motors for each spindle, 1942

No. 6 TOLEDO O.B.I. Press, 56 Tons

10"x24" NORTON Hydraulic Surface Grinder, 1942

25A HEALD Rotary Surface Grinder, 24" diameter, magnetic chuck

36" OHIO Dreadnaught Shaper, AC-MD

75 Ton HENRY & WRIGHT Double Crank Dieing Machine, roll feed & Scrap cutter

No. 22 MURCHEY Threader

No. 135 CLEVELAND Rigidhobbers

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#32 Lucas Precision Horizontal Boring Mill—Serial #32-18-21.
6' American Radial Drill—Serial #55592
#61A Fellows Gear Shaper
#3 Gisholt Turret Lathe—Serial #2807-1
16" Gould & Eberhardt Shaper
96" Gould & Eberhardt Automatic Gear Hobber—Serial #3234
#72A Heald Sizematic Internal Grinder—Serial #24498
60" Hanchett Face Grinder
Lodge & Shipley Lathe—Serial #29051
#2 Norton Tool & Cutter Grinder—Serial #3355
6D Potter & Johnston Automatic Chucker—Serial #70393
72" King Heavy Duty Vertical Boring Mill Serial No. Lot 38—#175

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Good used equipment—ready for work!

OVERHEAD CRANE

Manufactured by Morgan Engineering Co.
Span 27'
Capacity 60,000 lbs.
DC current, 230 volts

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VULCAN LOCOMOTIVE

H.P. 38
Steam driven
Standard gauge
4 wheel drive
Approx. weight, 44,000 lbs.

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CENTRIFUGAL PUMPS

One (1) DeLaval two stage centrifugal pump (2 single stage pumps in series), having name plate data as follows: Serial No. 50017, Type P-16, 1145 R.P.M., total head 450-feet, 6950 g.p.m. The runners in these pumps have been altered (reduced to 23" diameter) so that pump now has a capacity of approximately 10 m.g.d. against a head of 320-feet when operating at a speed of 1185 R.P.M. The shut-off pressure is approximately 420 feet. The capacity, head, etc., under altered conditions are taken from design data furnished by the manufacturer.

One (1) DeLaval Pump, single stage centrifugal, 8-inch horizontal suction, 8-inch horizontal discharge, capacity 2100 g.p.m. at 108-foot head, Serial No. 56986.

One (1) G.E. Induction Motor, 75 H.P., wound rotor, Model No. 8919, Type MT337-4-75-1800, Form B, 3-phase, 60-cycle, 440 volts, 130 secondary amperes, 40° C. Temperature rise, continuous duty, Serial No. 4223885.

One (1) bed plate for direct connection under pump and motor.

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2 SULLIVAN 17x12 AIR COMPRESSORS MD

Displacement 500 cu. ft., 50 lbs. pressure. Electric Motor—AC, 3 phase, 60 cycle, 100 HP, 440 volts, 900 RPM, synchronous type, complete with starting box and DC exciter. All electrical equipment manufactured by the Electric Machinery Manufacturing Co., Minneapolis, Minn.

3500 KW ROTARY CONVERTER

Self-starting Type

DC End Output

Size & Voltage: 3185 KW at 245 volts
3965 KW at 305 volts

Amp: 13,000	Form: P
Type: HCC-24	Serial: 5226957
Speed: 300	Mfg.: General Electric

AC End Input

Type: AH	Armature amp: 6500
D-C Volts: 30	Speed: 300
Form: P	Freq.: 60-Volts 220
Phase: 6	Serial: 5226958

Mfg: General Electric

Complete with switchboard and panel board. In good operating condition—can be inspected at original installation.

PLUS

3 Westinghouse transformers, 3 phase, 25 cycle, 13,200-202 volts, 5,280 KVA.

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50 UNITS—25 CYCLE, 3 PHASE, 220 VOLTS ELECTRIC MOTORS, FROM 3 H.P. TO 150 H.P.

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PUMPING UNIT

capacity 25 M.G.D.

Consisting of Fairbanks-Morse single stage centrifugal pump, 30 inch bottom suction, 24 inch horizontal discharge,—directly connected to Fairbanks-Morse synchronous motor 1250 H.P. 3 phase, 60-cycle, 13,200 volts. Built-in DC exciter 125 volts, 60 amps—all mounted on a cast iron base.

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2—STEAM TURBINE DRIVEN AC GENERATOR SETS

AC Generator, type ATB, amps 157, KW 500, volts—full load 2300, mfg. by General Electric Co.

Turbine, 150 lb. steam pressure, mfg. by Curtis Steam Turbine Co.

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2 CENTRIFUGAL PUMPS

manufactured by

A. S. Cameron Steam Pump Works

Size #18 Double Suction Volute
10000 GPM 50 ft. head
720 RPM Ser. #54660
Hydrostatic Test 100 lbs. per sq. in.

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1—ROUGHING UNIT (FOR STRIP OR PLATE) consisting of reversing SLABBING MILL and 3-high PLATE MILL.
1—24" BILLET MILL, 2-high, continuous, including 6 horizontal stands, 1 vertical edging stand and gear drive. Accessories include tables, cooling bed, and motor driven shear. *Available at very low price for prompt removal.*
1—SEAMLESS TUBE MILL, including furnaces, mills, handling equipment and electrical equipment. Will produce 6⅝" to 14⅜" O.D. tubes in lengths up to 50'.
1—56" 2-HIGH TEMPERING MILL FOR STRIP, including uncoiler, recoiler, motors and controls.
1—54" WIDE 3-HIGH SHEET BAR ROUGHING MILL with tables and gear drive.
1—10" ROD AND BAR MILL, 2-high, continuous, 14 passes.
3—8" x 12" UNITED COLD MILLS, 2-high, individual drives, combination pinion stands and gear reduction sets, coilers.
1—SHEARING LINE FOR STRIP, capacity 3/16" x 84" wide.
1—#6 HILLES & JONES VERTICAL OPEN SIDE BAR SHEAR, capacity 3½" round, with motor drive.
2—42" DIAM. HOT SAWS, motor drive.
1—BILLET HEATING FURNACE, 20' x 44', with pusher, capacity 30 tons per hour.
1—REWIND BLOCK, 15" dia. x 30" long expanding head. 5000 lb. capacity.

Typical: Shipment of 5500 horsepower motor and gear drive for plate mill.

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No. 0 G&L Horizontal Boring, Drilling and Milling Machine
Nos. 31 & 32 LUCAS Horizontal Boring, Drilling and Milling Machine
36" BULLARD Vertical Turret Lathe
100" BETTS Vertical Boring Mill

DRILLS
3'9" CINCINNATI BICKFORD High Speed Radial, '41
No. ES NATCO Multiple Spindle Drill—Hyd. table, '42

GEAR EQUIPMENT
Nos. 64, 72 & 725A FELLOWS Gear Shapers
No. 12 FELLOWS Gear Shaver, 1943
No. 36BM GOULD & EBERHARDT Gear Roughers

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No. 5 B&S 3" x 12" Plain Grinder
6"x 18" CINCINNATI Plain Hyd. Cyl.—Filmatic
6" x 18" LANDIS Type C Plain Grinder
8" x 18" CINCINNATI Pl. Saddle Type Grinder
8" x 18" NORTON Vertical Spindle Surface Grinder
10" x 24" LANDIS Universal Grinder
10" x 72" LANDIS Type C Hyd. Pl. Grinder—'42
No. 104 RIVETT Internal-External Grinders
No. 73 HEALD Internal Centerless Grinders
No. 172 HEALD Internal Grinder

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12" x 30" MONARCH Model C Toolmaker's Lathes
12" x 54" MONARCH Toolmaker's Lathe
13" x 18" MONARCH 'Air Gage Tracer" Mona-Matic Lathe
14" x 54" REED PRENTICE Geared Head Engine Lathe
16" x 30" LODGE & SHIPLEY Toolroom Lathe, '41
27" x 14' cc LEBLOND HD Engine Lathe, 42
30" x 10' bed AMERICAN "High Duty" GH
36" x 19' bed AMERICAN HD Lathe
42" x 25' cc AMERICAN "Super Productive" GH Lathe—two carriages

MILLERS
Nos. 0-8 CINCINNATI Plain and Vertical Milling Machines
Nos. 1-B & 1-12 KENT-OWENS M.D. Prod. Millers
Model MM-5 U.S. Multi-Miller
No. 2B&S Pl. Light Type Miller
No. 2M CINCINNATI Vertical Millers, 1941
18" CINCINNATI Mfg. Knee Type Milling Machines
4½ x 36" P&W Model C Thread Miller
36" x 36" x 16' INGERSOLL Planer Type Milling Machine—3 heads
36" x 36" x 12' INGERSOLL Planer Type Milling Machine—3 heads, Late

AUTO. LATHES & TURRETS
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No. 2 W&S Geared Friction Hd. Turret Lathe
No. 3 B&O Ram Type Universal Turret Lathe
No. 3 J&L Ram Type Universal Turret Lathe
No. 1H5 LIBBY Heavy Duty Turret Lathe
No. 1L GISHOLT Saddle Type Turret Lathe, 1942
Nos. 4D & 6S POTTER & JOHNSTON Auto. Lathes

MISCELLANEOUS
15" BETTS Vertical Slotter
½B P&W 2-spindle Reaming Machine
4" TAYLOR & FENN Spline Miller
6" P&W Upright Shaving Machine
24" x 24" 6' GRAY Double Housing Planer, 1941
38" MORTON Draw Cut Shapers, 1945

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193 Bent Street, Cambridge 41, Mass.

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AUTOMATIC, 1¾"—4 Spin. Gridley Model G
BOLT THREADER, 2" Landis, 2 hds., M.D. (2)
BOLT THREADER, 1½" Reliance Williams
VERT. Attach. for Boring Mach. for 330T G. & L. Mill & Outer Support
BORING MACH., 5" Bar, Betts Floor Type
BORING MACHINE, 4¼" Bar P. & H., #9, Floor Type
BORING MACHINE, 3" Bar Lucas, Table Type
BORING MACH., 3" Bar, Lambert Table Type, M.D.
BORING MILLS, 160" Cinci., Heavy, 2 Heads, M.D.
BORING MILL, 72" King, 2 Hds., M.D.
BORING MILL, 60" Colburn, 2 hds.
RADIAL DRILL, 4' 11" Col. Cinci. Bick., M.D.
RADIAL DRILL TABLES, 36" x 20" x 20" (10)
RADIAL DRILL, 6' 15" col. Amer., M-on-Arm
RADIAL DRILL, 8' 15" col. Amer., M-on-Arm, Tri. Purp.
RADIAL DRILL, 5' 14" Col. Amer., M.D.
RADIAL DRILL, 5' Niles, No. 10, M-on-Arm, Late
RADIAL DRILL, 4' Western, M.D. (2)
DRILL, 24" Cinci. Bick., Tapping
GEAR CUTTER, No. 15, B. & S. Spur & Bevel
GEAR HOBBER, No. 96H Gould & Eberhardt, M.D.
GEAR PLANER, 11" Reinecker, Bevel, A.C., M.D.
GEAR SHAPERS, Nos. 6 & 75 Fellows
GEAR SHAPER, Nos. 81A, 84A & 64 Fellows, 1945
GRINDERS, CYL., 16" x 48" Cinci., M.D.
GRINDERS, FACE, 84" Builders, 32" wheel
GRINDER, SURFACE, 30" Blanchard No. 16 25 H.P.
GRINDER, SURFACE, 14" P. & W. Vert. Spin. B.B.
GRINDER, UNIV., 12" x 36" Thompson, M.D.
GRINDER, Micro Int. M.D.
GRINDER, No. 6-T Sellers Tool, '42
LATHE, GAP 24"/48"x10' Bed, Fay & Scott
LATHE, 60" x 45' con., Mackintosh-Hemphill, 1942
LATHE, 36" x 20' con. Putnam, 2 carr., T.A.
LATHE, 26"/48" x 24' Bed, McCabe, Dbl. Spin.
LATHE, 25" x 12' Bed, B & E, T.A. Grd. Hd.
LATHE, 20" x 78" Matra, T. A., New
LATHE, 18" x 8' Bed, L. & S. Select Grd. Hd., M.D.
LATHE, 14" x 30" Con. Monarch, M.D.
TURRET LATHE, 21" Acme Univ., Brass, Late
TURRET LATHE, No. 1B Foster, Univ 2" capty. (2)
TURRET LATHE, No. 2B Foster, Univ., 3¼" capty.
TURRET LATHE, No. 3 AL Gisholt, 6¾" H. S.
TURRET LATHE, No. 3 Gisholt, Bar & Chuck
TURRET SCREW MACH., No. 4 W. & S., 1½" Bar
THREAD MILLER, 12" x 60" Morey Shield, '43
MILLER, No. 000 B.&S. Plain, M.D. Late
MILLER, No. 9 Sundstrand Rigidmil Hand
MILLER, No. 2 Van Norman, Duplex, M.D.
MILLER, No. 4B—B. & S. Plain
MILLERS, No. 3 Cinci. Pl. Motorized
MILLER, No. 4 Cinci., High Power Universal
MILLER, No. 30-H, Sundstrand, Ridigmil
MILLER, No. 22 L, Van Norman Ram Type
MILLER UNIV., No. 1½ B Special K. & T. M.D.
PIPE THREADER, 2" Landis A.C., M.D.
PLANER, FROG & SWITCH, 42" x 18" x 18' N.B.P.
PLANER, PLATE, 36" x 1" Cleveland, M.D.
PLANER, 36" x 36" x 14' Whitcomb, 2 Hds., M.D.
PLANER, 24" x 24" x 5' Gray, 1 Hd., M.D.
PRESS, Hydr., 200 Ton, Sectional Flanging
PRESS, No. 75½, Bliss S.S., 6" Stroke, 75 ton capty
PRESS, No. 58, Toledo SS, Grd., 171 Ton capty.
SHAPER, 48" Morton Draw Cut
SHAPERS, 32", 20" & 16" Gould & Eberhardt

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54" SPIRAL DRIVE
VERTICAL TURRET LATHE
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NEW 1944
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500, 600, 800, 1200, 1600# B&S, B. D.
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1400# Chambersburg B. D. Model F
2000# Lane Steam Drop, 48" bet. guides
1100# N.B.P. Single Frame
2000# N.B.P. Single Frame
50# Bradley Upright Steam
300# Bradley Upright Helve

TRIMMING PRESSES
1—#73 Bliss Consolidated OBI, MD, 40 Ton
1—#55½ Toledo, SS, MD, 98 Ton
1—#56 Toledo, SS, MD, 113 Ton
1—Chambersburg, SS, MD, 150 Ton
1—#7 Hilles & Jones Guillotine Bar Shear
All Presses rebuilt and guaranteed

MISCELLANEOUS
2000# Clark Low Lift Platform Truck
2000# Clark High Lift Platform Truck
2000# Automatic Low Lift Truck
2000# Mobilift Fork Lift Truck
#60 W-F Special Long Thread Roller
#11 W-F D.S.S.D. Cold Header
42" Newton Cold Saw, Extra Blade
Parts for 3000# Erie & Chambersburg
28 x 60 Hydrotel Type Vertical Mill
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No. 16 Blanchard Grinder, ser. No. 2343.
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Hoppers, Twin, All-Steel, 50-Ton, Cross Dump
Hoppers, All-Steel, 70-Ton, Cross Dump
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#CINCINATI CENTERLESS, Serial #B3441, with work rest.
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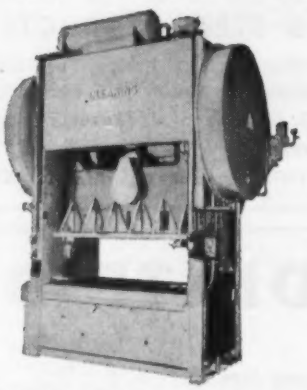

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Pfauter Gear Hobber, Model RS 1, m.d.
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Gleason Spiral Bevel Gear Rougher, m.d.
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SPECIALS OF THE WEEK

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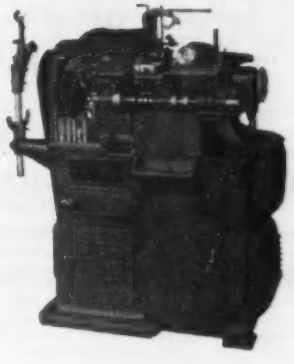

BROWN & SHARPE: (12) Model OG, serial #9600 & 10700 series, ⅝" capacity.

BROWN & SHARPE: (7) Model OOG, serial # 14 to 16000 series, ⅜" capacity.

BROWN & SHARPE: (4) Model 2G, serial #8500 & 11500 series, 1¼" capacity.

CLEVELAND: Model AA-11, Serial #36586.

CLEVELAND: Model B, Serial #42618/843, 1 1/16" capacity.

CONOMATIC: 4 Spindle, Serial 2309FF, 1½" capacity.

NEW BRITAIN GRIDLEY: 61, 6 Spindle, Serial #25410, 1⅜" capacity.

OTHER MODERN TOOLS IN STOCK

BORING MILLS: Bullard, Giddings & Lewis, New, 3" Capacity Horizontal
DRILLS & RADIALS: New Geared 24" Drills, 2" Capacity, New Radials 3½" x 12" Column
ENGRAVERS: Auto, Deckel, Gorton, Taylor & Hobson
GEAR EQUIPMENT: Barber Colman, Fellows, National Broach, Red Ring
GRINDERS, CUTTER, SURFACE, ETC.: Abrasive, Blanchard, Brown & Sharpe, Bryant, Cincinnati, Heald, Landis, Norton, Oliver Reed, Van Norman
LATHES: American, Hendey, Harding, LeBlond, Monarch, Pratt & Whitney, New 16" to 28" G. H. Gap
MILLS, PLAIN & UNIV.: B. & S. Milwaukee, Van Norman, New Univ. & Vert.
PRESSES: Bliss 5-48, Hamilton 800 Ton, Toledo
SHAPERS: Cincinnati 20", Rockford 24"
TURRET LATHES: Bardons & Oliver, Gisholt Nos. 2L, 5, Jones & Lamson No. 5, Preselector Bar Feed, Libby, 5" Capacity, Warner & Swasey, 1A, 2, 3, 4, 5

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Niles 36-44 Vertical Boring Mill, motor driven, 1 rail and 1 side head
Cincinnati #3 Vertical Mill, single pulley drive
Niles 42"-50" Burnisher, Facer and Box Borer, late type, motorized
Cincinnati-Bickford 21" Sliding Head Floor Drill, 4 SCD, #3 Morse taper
Cincinnati-Bickford 5'13" column Radial, gear box on base with motor
Foodick 6'15" Radial Drill
Fellows 612 Spur Gear Shaper
Fellows 725 Gear Shaper with Spur Guide
Cincinnati 24" Back Geared Shaper
Columbia 28" Back Geared Crank Shaper
Gould & Eberhardt 16" Back Geared Shaper
Gould & Eberhardt 24" Back Geared Shaper
Gould & Eberhardt 28" Back Geared Crank Shaper
Gould & Eberhardt 32" Back Geared Crank Shaper
Gould & Eberhardt 96H Gear Hobber
Gould & Eberhardt 60BM Gear Rougher
Cincinnati #2 Centerless Grinder
Brown & Sharpe #12 Plain Grinder, reversing mechanism
Heald #50 Internal Grinder
Heald 72A3 Internal Plain Grinder
Heald 70A Internal Grinder, late type
Heald 78 Centerless, Internal & Cylindrical Grinder
Jones & Lamson 8 x 31 Thread Grinder
Landis 26" x 168" Plain Cylindrical Grinder
Landis Type C Plain Grinder, 10 x 18, late type
Landis 16" x 72 Plain Cylindrical Grinder
Oliver Template Tool Bit Grinder
Sellers 4T Tool Grinder, late type
Sellers 6T Tool Grinder, late type
Acme #2 Full Universal Turret Lathe, 3¼" hole in spindle
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LeBlond 15" x 8' G.H. Lathe, 9 spindle speeds
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Lodge & Shipley 18" x 6' G.H. Lathe, 12 speeds
Lodge & Shipley 29" x 8' G.H. Lathe, 12 speeds
American 30" x 14' G.H. Lathe, taper
Monarch 24" x 12' G.H. Lathe, taper
Warner & Swasey 3A Turret Lathe, Geared Head
American 36" x 40' G.H. Internal Face Plate Drive, 16 spoods, 33' center distance, taper attachment
LeBlond 2½ Universal Mill, 3 SCD, motorized
Brown & Sharpe #3 Plain Miller, 4 SCD
Hall Style "D" Planetary Miller late type
LeBlond 3H Plain Miller, 3 SCD
Liberty 36"x36"x18' Double Housing Planer, 2 rail and 2 side heads
Pond 42 x 42 x 10' Double Housing Planer, DC motor drive, 4 heads
Pond 48 x 48 x 16' Double Housing Planer, DC motor drive, 4 heads
Bliss #37 Coining Press, ¾" stroke, 150 ton
Rasmussen 6 x 6 Power Hack Saw
Geo. Ohls Shear, 3/16 x 10' capacity, motorized with 10 HP motor

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1—30" x 36" or 60" Breakdown Mill, 2 high, complete with pinion stand, front 7 back tables, drive, motor & motor-generator set.

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1—Cold Mill, 2½" x 7½", 4-High, complete with reels, drive, hand screwdown.

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TYPE 303			
3/16"	Diameter	Weight	300 lbs.
5/16"	Diameter	Weight	620 lbs.
1/2"	Diameter	Weight	500 lbs.
5/8"	Diameter	Weight	228 lbs.
9/16"	Diameter	Weight	517 lbs.
11/16"	Diameter	Weight	231 lbs.
3/4"	Diameter	Weight	1,000 lbs.
13/16"	Diameter	Weight	978 lbs.
15/16"	Diameter	Weight	23 lbs.
7/8"	Diameter	Weight	25 lbs.
1"	Diameter	Weight	12,000 lbs.
1 1/8"	Diameter	Weight	944 lbs.
1 3/16"	Diameter	Weight	210 lbs.
1 5/16"	Diameter	Weight	4,403 lbs.
1 3/8"	Diameter	Weight	2,984 lbs.
1 3/4"	Diameter	Weight	2,157 lbs.
1 15/16"	Diameter	Weight	2,400 lbs.
3"	Diameter	Weight	219 lbs.
TYPE 304			
1/2"	Diameter	Weight	500 lbs.
1 5/16"	Diameter	Weight	1,000 lbs.
3"	Diameter	Weight	200 lbs.
3 1/4"	Diameter	Weight	620 lbs.
TYPE 309			
5/16"	Diameter	Weight	600 lbs.
TYPE 321			
1"	Diameter	Weight	10,000 lbs.
TYPE 347			
3/4"	Diameter	Weight	1,002 lbs.
1 3/16"	Diameter	Weight	200 lbs.
1 21/64"	Diameter	Weight	1,210 lbs.

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Immediate Shipment From Warehouse
Tungsten Rounds

36 Bars—2.739"—(18-4-1)
Ground & Polished—9000#

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Oil Hard Tool Steel

4⅛" RD.—H.R.—Crucible DBL/Spec.	15000#
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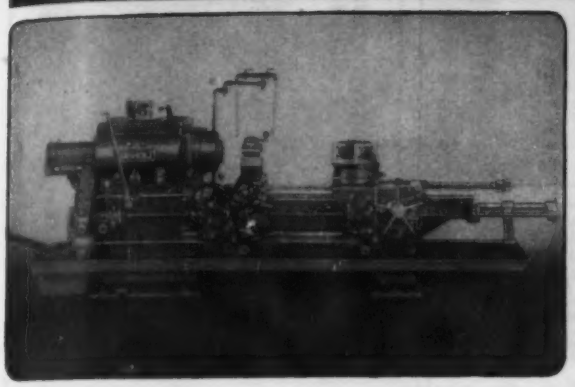

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1	200	Al. Ch.	AR	440/220	580
2	125	Al. Ch.	AR	2200	1750
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2	1750	G.E.	100	2300	3600
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1	250	El. Mchy.	80	440	400
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1	150	G.E.	100	550	600
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1	2400(3-U)	Whse.	720	600	4800/2400
1	1000	G.E.	514	550	2300
2	500	C.W.	720	575	2300/440
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1	500(3-U)	Whse.	1200	250	440
1	300	Al. Ch.	1200	250	2300
1	250	Whse.	1200	125/250	2300
1	200	Whse.	1200	125/250	2300/440
1	200	Ridgway	900	275	2200
1	155	G.E.	720	250	2300/440
1	150	G.E.	1200	500	2300/440
1	100	Al. Ch.	1200	125/250	4000/2300
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1	100/140	Whse	MCB-90	500/415
4*	100/140	G.E.	MDA-108	430/500

Qu	HP	Make	Type	RPM
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1	100	G.E.	CO-1831	360
2*	100	G.E.	CO-1831	875
1*	75/100	Whse.	CK-10	500/875
1	75/100	Whse.	K-10	425/670
5	70/90	Whse.	MCA-70	440/480
2	70/90	Whse.	MCB-70	440/480
1	54/80	C.W.	FW	575/690
4	57/45	Whse.	K-9	570/515
2	65/85	G.E.	CO-1830-A	700/850
1	50/65	G.E.	C-1830-A	525/650
4	50	G.E.	CO-1810	725
2	50/65	Whse.	MCA-60	475/625
1	50	G.E.	CC-1829	750
3*	35	G.E.	CC-1828	875
1	35	G.E.	CO-1809	725
1	30/40	Whse.	MC-50	525/640
1	30	C.W.	EH	750
2*	16/19	C.W.	BW	620/540
6	10/15	Whse.	K-5	630/560
2	15/19	G.E.	CO-1807	650/575
1*	17	G.E.	MDA-103	700
2	15	G.E.	CO-1806	875
1	16/13	G.E.	MDB-408	615/700
1	13/17	G.E.	MDB-103	645/725
1	11/13	C.W.	A2W	1050/910
2	10/13¼	Whse	MCA-41	725/810
1*	12	G.E.	MDA-102	975
3	10/13¼	G.E.	MDA-404	800/700
1	10	Whse.	CK-4	525
2	8/9½	C.W.	AW	695/835
2	7½/8¼	Whse.	K-3	585/650
1	7½/10	G.E.	MDA-403	800/850
1	7½/10	C.W.	SWS-7½	800/675
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5	12/9	G.E.	MDA-102	875/725
1	10/7	G.E.	MDA-102	1025/800
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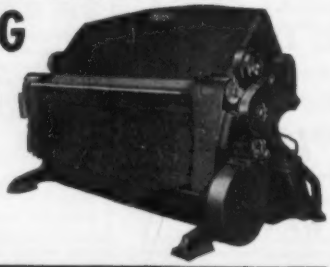
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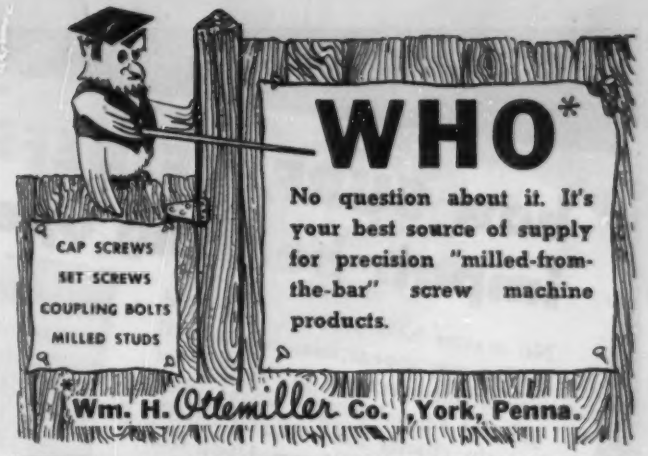
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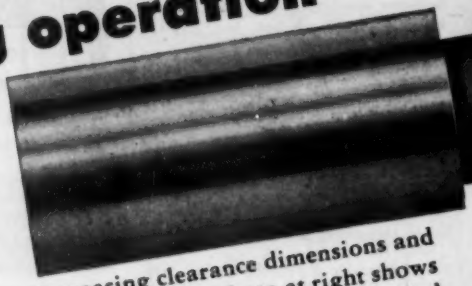

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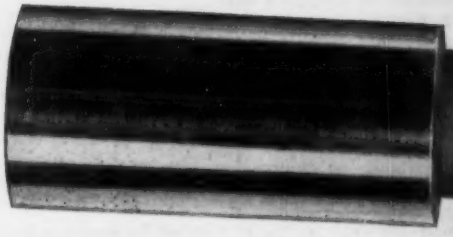

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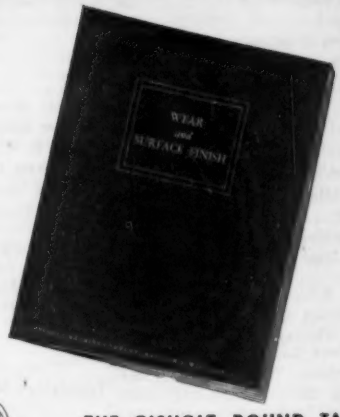

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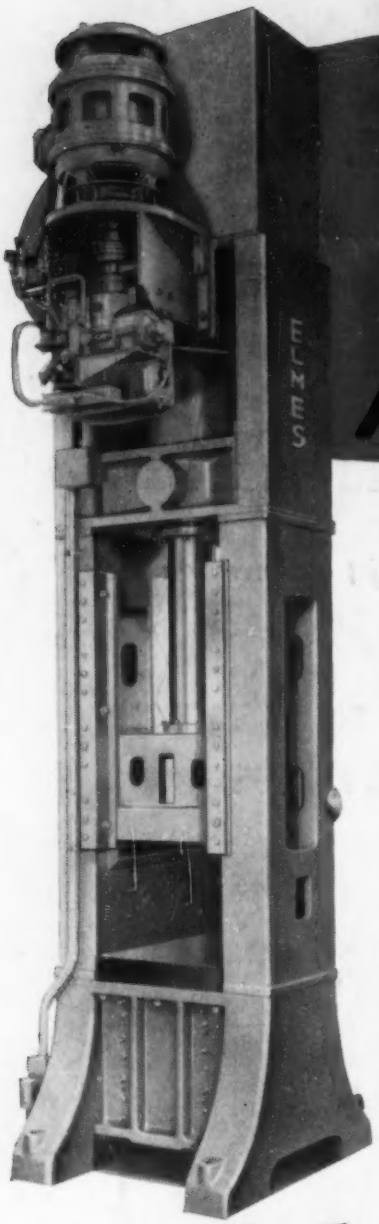

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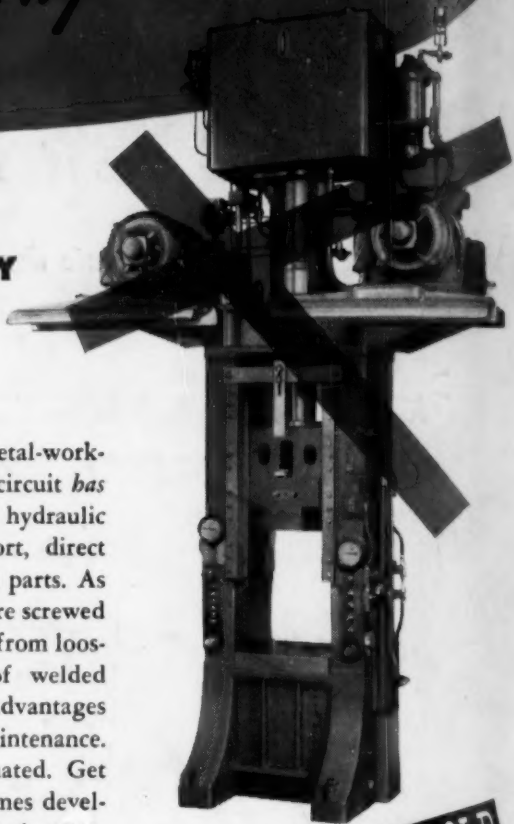

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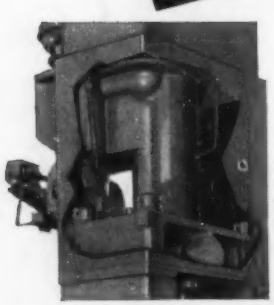

New Elmes Drawing and Forming Press Equipped with Pipeless Hydraulic Circuit

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